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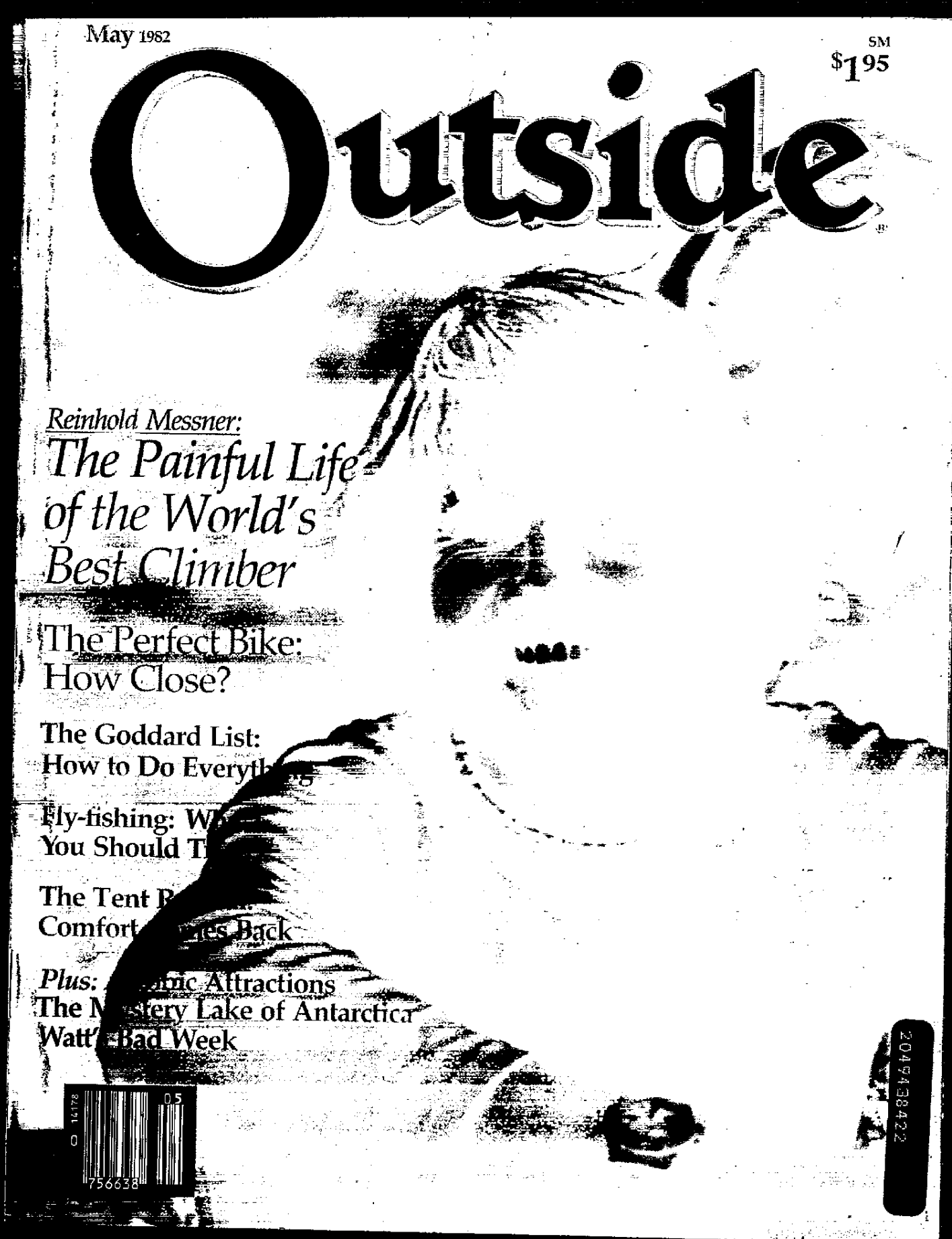

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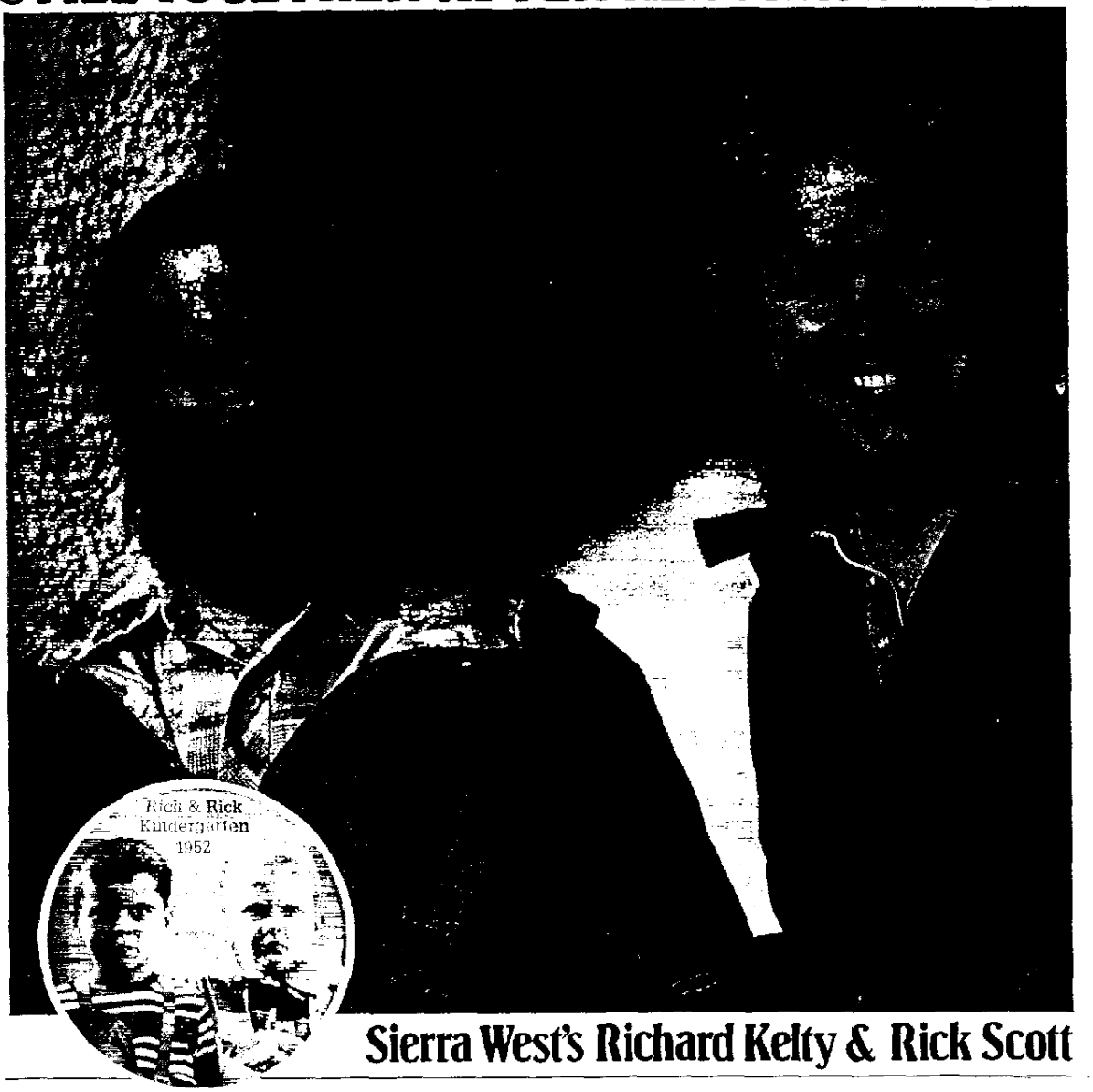

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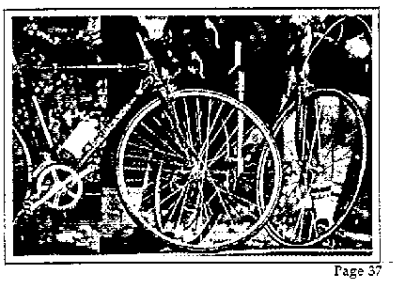

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Cover photograph courtesy of Reinhold Messner

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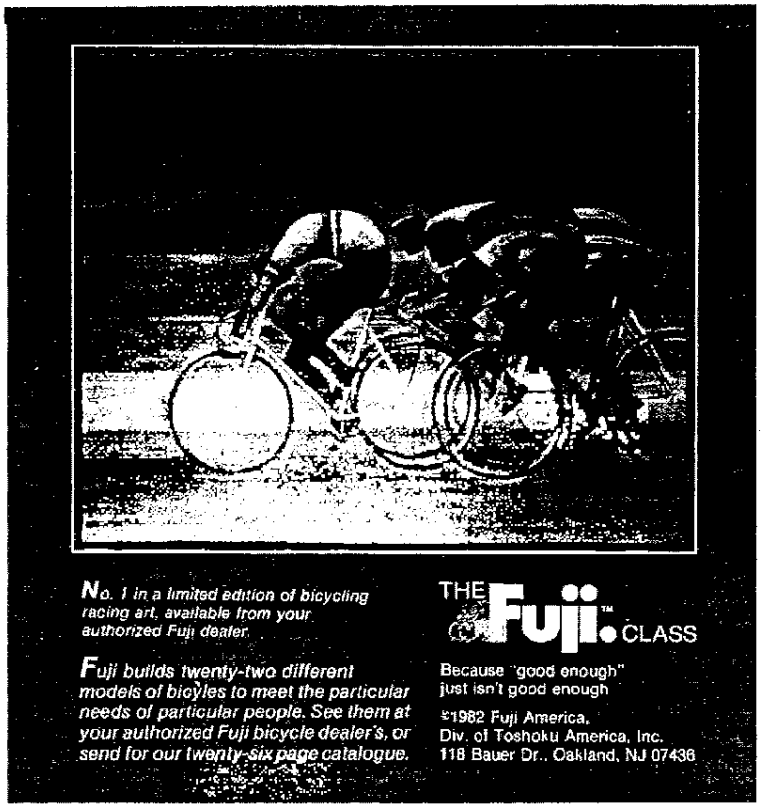

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New York	Chicago
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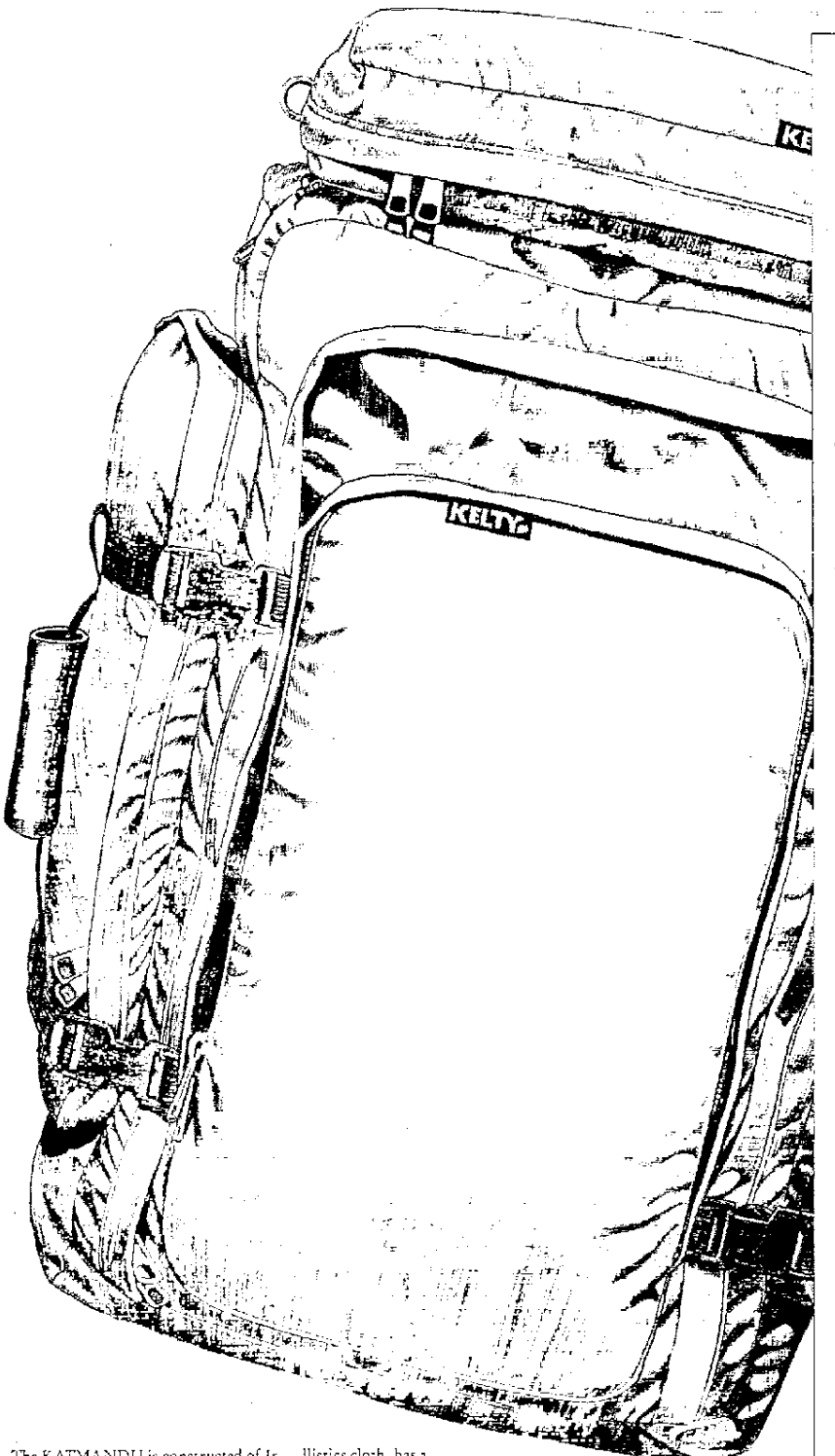

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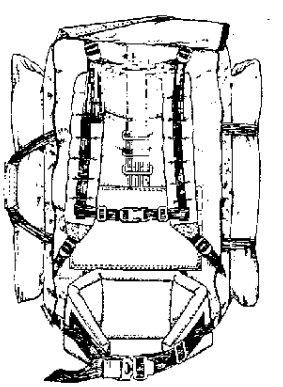

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The Straits of Florida

It is difficult to address subjects like these without sounding like an alarmist; so let's begin with this premise: There are probably worse things that could happen in the world than Florida's becoming a desert. Consider all the fine places, like Palm Springs, that get along nicely as such.

But some fascinating things have been happening in Florida recently, things that say something about the way we look at environmental problems in their early and later stages, about our ways of dealing with them, and about their ultimate costs.

Florida has been experiencing a drought. And the drought, coupled with the state's ever-increasing reach for former wetlands and demand for fresh water, has been drying up the Everglades.

That is bad news for waterfowl and alligators and for people who wander the Everglades looking at them. It is bad news for sport fishermen in the Florida Keys, whose favored species spawn in the brackish confluence of salt and fresh water in Florida Bay. It is bad news for the million ducks who used to flock to the Kissimmee River valley each year. But there is evidence that the costs of the drainage and development of Florida's wetlands will not be limited to a few gators and vacationing fishermen.

It turns out, according to studies by the highly regarded Florida ecologist Arthur Marshall, that the Kissimmee River valley, heavily drained and developed for decades, is actually the *source* of most of South Florida's summer rainfall, not simply a victim of the drought. And that is bad news for everyone.

According to Marshall, the wide, marshy dispersal of water south of Lake Okeechobee into the Glades until recently had been a wonderfully successful "rain machine." Each day, when the shallow, still water was warmed by the summer sun, huge amounts of moisture would rise into the atmosphere, condense in the afternoon, and actually pull down a greater amount of water from the upper Gulf and Atlantic air currents. In St. Lucie County, for example, which has lost 50,000 acres of wetlands in the last 30 years, rainfall has dropped from 68 inches in 1950 to 38 inches last year. Some meteorologists believe that South Florida is undergoing a climatic shift, from a summer "rainy regime" to a summer "heat regime."

The price? Start with the $1-billion-a-year sugar cane industry, bigger than Hawaii's, which is on the ropes right now. And the dwindling Biscayne Aquifer, the only source of fresh water for 3 million South Floridians, which is being fouled by salt water from the Atlantic. The potential problems are enough to make even the most bottom-line oriented nonenvironmentalist feel a bit faint.

One lesson to be learned from the past ten years is that situations like this can be turned around. And in Florida recently, everyone from the sugar companies to the state legislature to Governor Bob Graham seems to have awakened with a start: Wetlands cleared but not yet developed may be allowed to revert to their natural state. The Kissimmee River Canal, which has channeled rather than dispersed the water, may be put out of operation and the natural flow allowed to resume.

The point here is that the people who noticed the problems first, those concerned with the wetlands and wildlife and the natural systems involved, were dealing with a situation that, in the beginning, didn't lend itself to cost-benefit analysis. Now that the situation is nearly out of hand, the dollar signs are flashing.

Recently a friend of ours wrote to tell us of the miraculous restoration of striped bass fishing in San Francisco Bay, a comeback from the days of heavy local pollution, a comeback newly threatened by a plan to construct the controversial Peripheral Canal. The proposal would, quite sensibly, divert needed fresh water from the relatively abundant Sierra drainages of northern California to the dry, populous south. As poignant and regrettable as the ruination of our friend's fishing would seem, how could the needs of so many people be denied for the sake of some striped bass? But perhaps the tradeoff isn't as simple as it looks.

California voters have another month to examine the situation more closely before a referendum on the question June 6.

Lawrence Kirke
Editor-in-Chief

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LETTERS

Heavenly Dialogue

Who could imagine sitting in on a philosophical discussion between Edward Abbey and Henry Thoreau? You folks have done the next best thing ("The Green River Dialogues," February/March). Thank you for sharing Abbey's insight into a great being.

Jack K. Holcomb
Laureldale, Pennsylvania

Tundra Skiing

While reading "Dream Skiing" (February/March) I was disturbed by the photo on page 74 of a skier skiing on a melting alpine meadow. The meadow or tundra is a very fragile ecologic community; when the underlying layers are frozen and the top has thawed, the soil becomes even more fragile. Just walking on these meadows at this time is at best damaging.

With so few areas still remaining environmentally intact, we must all work together to increase awareness of the severe damage that can be caused by the smallest thoughtless act.

Norbert M. Welch, M.D.
Dallas, Texas

Cover Lines

Until recently there were very few women who were well known as mountaineers, climbers, runners, and guides, and with one photo—your February/March cover—I feel you've only, like so many other people, set us back further. It's hard enough to be taken seriously in many still male-dominated recreational activities without this kind of exploitation by a normally outstanding magazine.

Nancy G. Peters
Portland, Oregon

The empty and plastic sexuality suggested by your cover photo is to enriched and enriching sex as snowmobiles are to a walk in the winter woods. I am thoroughly offended by your attempt to attract me to the substance of your magazine through the use of hyped-up sex.

David Forrest
Cranbury, New Jersey

We at Holubar have fallen in love with the woman on your February/March cover! Thanks also for the super articles over the past months; we especially enjoyed the article on Moose's Tooth ("The Last Great Problem," November).

Jerry L. Cooke
Fort Collins, Colorado

The tacky cover on your February/March issue further confirms my suspicion that you are indeed the *Argosy* of the hip generation.

Sean Freeman
Studio City, California

If you must resort to sex to sell copies of your informative and entertaining magazine, then we red-blooded female readers demand equal time for well-muscled, scantily clad "cover boys."

Julie Walker
Whitefish, Montana

Watt's Pasturage

To put Interior Secretary James Watt out to pasture would be a big mistake ("The Taming of James Watt," February/March). In order to fulfill his own self-interests (in the name of ours), he would dig it up, strip it, and pollute it, and it would be ruined—forever.

Scott A. Morrill
Gunnison, Colorado

While I don't agree with everything Watt proposes, it is obvious his programs consider economic growth much more than did those of his predecessor, Cecil Andrus, and therefore are more in tune with the times. In her article on Watt, Nancy Shute finds him guilty of failure to expand the National Park System. But while Congress has provided for the purchase of new parks, it has continually underfinanced the maintenance of existing parks. Our parks really are in sorry shape. It is ironic that Watt is criticized for his foresight in recognizing this problem, while Andrus is praised for his efforts to expand a deteriorating system.

How about an article or two supporting Watt's side of the issue?

Jim Gerber
West Jordan, Utah

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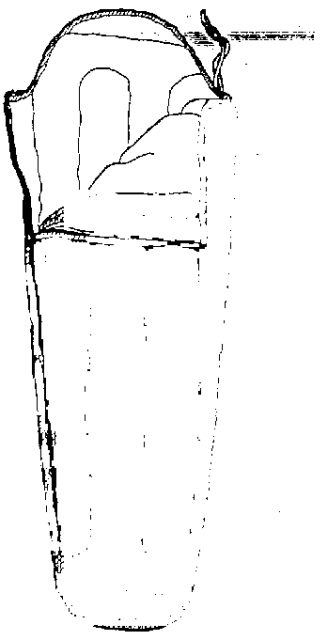

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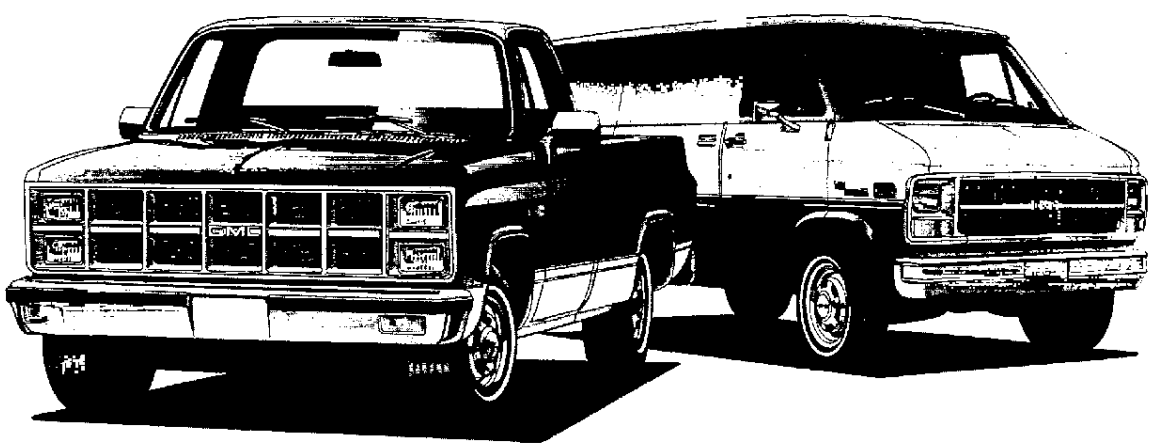

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Andrea Nellius

The view from Mount Iouktas: powerful enough to inspire the ultimate sacrifice?

Mystery at the Altar

Modern archaeologists solve an ancient murder in Crete

The excavation site, an ancient temple, is itself unremarkable: a small, low-walled structure surrounded by a chain-link fence. It lies on the north slope of Mount Iouktas, in the center of the island of Crete, ten miles up a dirt road from the town of Arkhanes. The view from the top, however, is breathtaking—a high, powerful vista that suggests why the builders of the temple, the peaceful Mediterranean people called Minoans, chose the spot. It also suggests why Mount Iouktas became the reputed burial place of the Greek god Zeus. And it makes the dark secrets of the temple, 37 centuries old, somehow easier to believe.

In 1979 Yannis Sakellarakis, a noted Greek archaeologist and director of the Iraklion Museum in Crete, began excavating the temple, which had been discovered earlier by his wife, also an archaeologist. While working in the west chamber of the temple, Sakellarakis made an unexpected discovery: three human skeletons. One was a female, lying face down, crushed by falling beams. Another was a man wearing jewelry, which indicated that he was probably a priest. The third body was that of a young man about 18 years of age lying on an altar. Nearby, Sakellarakis found a bronze knife. He also noted that the walls of the room had been charred by a fire. His conclusion: The Minoan priest had been performing a human sacrifice shortly before a massive earthquake struck, collapsing the roof and upsetting oil lamps.

When Sakellarakis and his wife announced their findings last year, the roof of public opinion nearly fell in on them as well. Academics from around the world criticized their conclusions, and fellow Greeks were outraged at the suggestion that such a barbaric act could have been performed by their ancestors, the gentle Minoans.

"Sometimes I tell people that if I ever find another human skeleton, I'll just quietly bury it," Sakellarakis says.

Despite the uproar, Sakellarakis' evidence seems irrefutable. With his first suspicion of human sacrifice, he called in a pathologist and a criminologist from the University of Athens, turning the puzzle into a modern crime mystery.

He also brought in Dr. Alexandros Contopoulos, an anthropologist, who determined that the young man on the altar had died of a loss of blood—before the fire occurred. His evidence: When a body with blood intact is burned, the bones remain white. The bones on the youth's right side were black, showing that he'd lost more than enough blood to kill him.

"We could make a good case against him in court," says Dr. Antonio Koutselinis, the criminologist on the team.

The jury is still out, however. No one, including Sakellarakis, claims that this was anything more than a one-time event—an extreme effort to appease the gods as the earth rumbled and threatened a savage jolt.

Other experts have pointed out that classical Greeks offered human sacrifices more than once during extreme emergencies. It has been noted, for example, that according to Plutarch, three men were sacrificed to assure victory at the Battle of Salamis. And in the seventh century B.C., a human was sacrificed in an effort to rid Athens of the plague.

—Dick Nellius

Ear to the Ground

The world is suffering through—ah, consumers are benefiting from the oversupply of oil...

—Clifton C. Garvin, Jr., chairman of Exxon Corporation, while addressing securities analysts in New York City

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Dan Cosgrove

Costlier Camping

Heading for the national parks this summer? Don't forget your wallet. The cost of getting back to nature is going up, thanks to inflation and Reaganomics.

User fees—charges for campsites, cave tours, and odd services such as the elevator at the Statue of Liberty—have been raised an average of 73 percent at the nation's 320-odd parks and recreation areas, according to the National Park Service. Nightly camping fees at the more popular western parks, like Yellowstone and Yosemite, jumped from $4 to $6, while fees at less-traveled areas increased to an average of $4.

The user-fee hikes are pegged to increases in the cost of private campgrounds near parks. Local businessmen were being undercut by the government, and they found sympathetic ears in the Reagan administration.

Still in the works is a more politically charged plan to increase entrance fees at national parks, forests, and Army Corps of Engineers recreation areas—part of a Reagan plan to make users of special government services pick up part of the tab.

—Nancy Shute

James Watt's Flameout

A nasty month at Interior

As of last March, the possibility existed that Interior Secretary James Watt could go to jail. There were several ways for this to happen.

In one scenario, the U.S. House of Representatives would find Watt in contempt of Congress and invoke a rarely used rule in which the secretary would be taken into custody, tried on the House floor, and imprisoned for the rest of the congressional session.

The chances of Watt's ever doing time were slim. But still, there were a few days last winter that must have been exciting even for the controversial secretary.

Watt's most conspicuous problem was the vote of the House Energy and Commerce Committee to find him in contempt. The dispute arose when the committee subpoenaed documents pertaining to Canadian energy policies and their effects on U.S. business. On orders from President Reagan, Watt refused to turn over 31 of the documents. The committee's vote for the most part followed party lines. Watt called the action a vendetta launched by Democrats. The only Republican to vote for contempt, Pennsylvania congressman Marc Marks, even wondered in front of reporters whether the Reagan administration had set up Watt "as an excuse to relieve him of his duties."

For environmentalists, the month's most important news was Watt's surprise introduction of a new wilderness protection act. Coming after months in which the secretary had pushed for more drilling and mining in wilderness areas, the action at first seemed a significant turnaround and public-relations victory. But within days most of the country's environmental groups made it clear they felt they were being deceived.

Specifically, the environmentalists pointed out that new legislation is not needed to ban development of wilderness areas, because the 1964 Wilderness Act prohibits all such leasing after 1983. Watt's new bill would also prevent Congress from setting up new wilderness areas after 1987 and permit the president to okay development of wilderness areas if he saw an "urgent national need."

Finally, as if all this weren't enough, Watt came under fire from the U.S. comptroller general, who said that the government would not pick up the tab for two parties Watt held last December in the former home of Robert E. Lee. The house is now run as a national monument by the Interior Department, and Watt had billed his department $8,842 for the two parties. The comptroller said the government would pay only $5,400.

For the secretary, well known for his scathing remarks about federal spending and bureaucrats, the highest price was probably paid in embarrassment. Still, watching Watt react spiritedly to hostile congressmen questioning him about the parties, one could not help thinking that this was the type of confrontation he most enjoyed.

As if adding final insult to the injury already inflicted upon his public image, Watt's Interior Department in February stopped sending out immediate press releases to Washington reporters.

—David Schonauer

Bruce Hoertel/Camera 5, Inc.

James Watt testifies in Congress: enjoyable confrontation or an administration setup?

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Source: https://www.industrydocuments.ucsf.edu/docs/zmwm0004

Jack W. Dykinga

Mind over ice: biofeedback and 600 determined test subjects

Calling Dr. Frostbite

Climbing McKinley to study the cold

In recent years Alaska's 20,320-foot Mount McKinley has drawn more than 600 mountaineers each climbing season. One in a hundred of those climbers dies on the mountain. Still more numerous are cases of frostbite—12 to 18 percent of McKinley's climbers sustain some damage from the cold. Last year, 18 climbers were treated in the Providence Hospital Thermal Unit in Anchorage. And that treatment—though greatly advanced over old methods—still included amputation in some cases.

This spring a team of doctors will be stationing themselves on Mount McKinley to find new answers to the problem of frostbite. And for those answers they'll be looking to climbers.

"There's nowhere else on earth where you have 600 determined people marching into an arctic land mass 20,000 feet high," says Dr. Dean Rau, an orthopedic surgeon working on the research project. Besides having a large number of climbers, McKinley is also a cold mountain—colder than Mount Everest, where a medical research project on the effects of altitude was conducted last fall.

The McKinley project is under the direction of Dr. William Mills, an orthopedic surgeon from Anchorage, and is being sponsored by the University of Alaska. If all goes as planned, as many as 20 Anchorage physicians will be on the mountain for two- and three-week stints until the climbing season slows in late June.

The doctors will provide hospital services when necessary. Mostly, however, they will be recording data on the physical and mental conditions of climbers. They will be asking questions about incidents of altitude sickness, frostbite, and hypothermia. They will also be measuring oxygen levels in blood and the fluid in fingers and toes.

Physicians will also be investigating the use of biofeedback to prevent frostbite. Equipment will measure the mental control climbers can assert over dilation of blood vessels in their fingers and toes. The more dilated the vessels, the warmer the extremities.

—Mark Skok

Sherpa Survival Course

A new center for an endangered culture

The Tengboche Monastery in Nepal is surrounded by a forest of birch, fir, and rhododendron. Not far away is Mount Everest; but even more impressive, and closer, is the icy fang of Ama Dablam. There is little doubt why the area draws thousands of trekkers each spring and fall. But as you might expect, hosting that many visitors has caused problems for the monastery and the Solu-Khumbu region. The Buddhist tendency is to take the long view in such matters; as Tengboche's incarnate lama, Nawang Tenzing Rimpoche, told members of the American-sponsored Khumbu Clean-Up Project in 1975: "You cleaned the mountains today, but they'll be dirty again tomorrow."

The Rimpoche was right. The region today is more heavily traveled—and thoroughly trashed—than it was seven years ago. And that has led to other, more serious problems. Despite regulations, deforestation continues, and the resultant erosion has made the economy even more dependent on tourism. Like other small monasteries in the region, Tengboche is also suffering from a decline in the number of young novitiates. Says Kathleen Peterson, field coordinator for the Harvard-based group Cultural Survival, "People are becoming reluctant to send their kids up there. The possibilities for wage earning via portering are so enticing you have to make traditional monastic education equally attractive."

That is what the Tengboche Monastery is trying to do by seeking money from mountaineers and trekkers for a Sherpa Cultural Center. Along with badly needed housing for young monks, the center will include a small library and museum with multilingual exhibits.

About $50,000 is still needed to complete the Tengboche project. A crew of Solu Sherpas has volunteered its labor, and work is under way. If you'd like more information on making a tax-deductible contribution, write Cultural Survival, Inc., 11 Divinity Ave., Cambridge, MA 02138.

—Kief Hillsbery

ALMANAC

The Environmental Protection Agency's Office of Water Planning and Standards has just completed its annual report on fish kills caused by pollution. The document reveals that 1979, the last year for which data have been analyzed, had the smallest number of kills since record keeping began in 1960.

For the first time, the EPA separately identified those kills caused by "Priority Toxic Pollutants." There were 31 incidents in 1979 involving these substances, resulting in the death of .8 million fish, a relatively small number.

A total of 6.4 million fish died from general water pollution, compared with a previous low of 6.9 million in 1963 and an all-time high of 119 million in 1974.

As usual, agricultural and industrial operations accounted for almost half the fish kills; municipal operations, transportation, and other activities accounted for the rest.

The biggest kill of the year occurred in Piney Creek, Pennsylvania, when cyanide contamination from a metals industry operation killed almost three quarters of a million fish.

—Robert Goldstein

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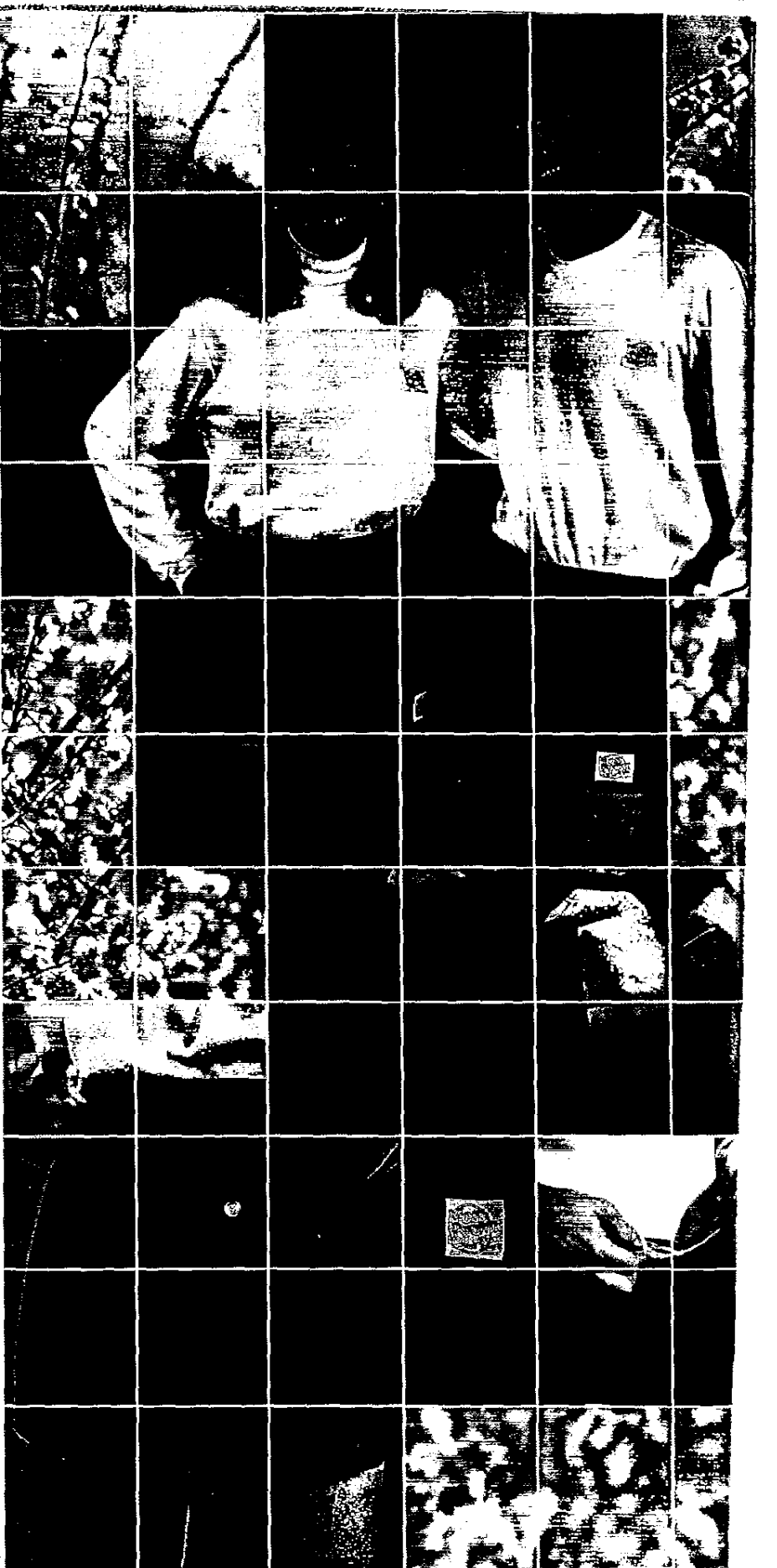

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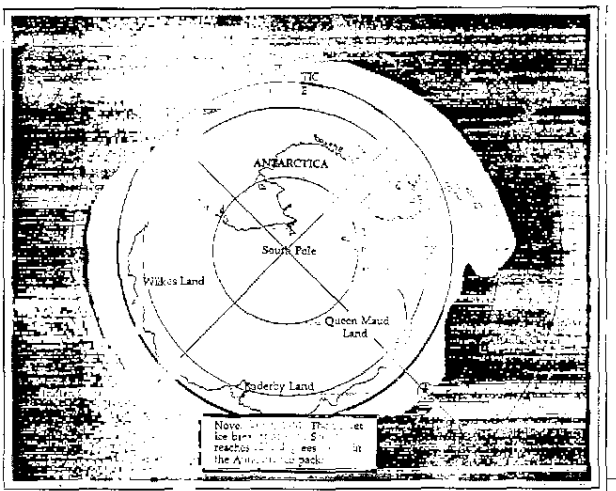

Expeditions:

Finding a hole at 62 degrees south

In the winter of the Southern Hemisphere, which begins about this time of year, a huge area of ocean around Antarctica freezes over. But during the winters of 1974 to 1976 weather satellites observed something unusual in an area of the sea located at zero degrees longitude and 62 degrees south latitude. It was a hole in the ice cover where the ocean had not frozen, a hole the size of Lake Superior.

Last October, when the southern ice pack was at its greatest size but the weather had begun to warm, an unusual team of scientists boarded an ice breaker for an expedition to where the mysterious hole had been sighted. The scientists already suspected that this lake in the ice was a phenomenon called a *polynya*, from a Russian word meaning "unfrozen water surrounded by ice." Though they aren't sure what causes a polynya, scientists think they may occur cyclically when warm water from some unknown source rises and displaces cold water at the surface.

What made the research team unusual is that it was composed of 13 American and 13 Soviet scientists. The head of the American crew, Dr. Arnold Gordon, of Columbia University's Lamont-Doherty Geological Observatory, says discussions for the joint venture began in 1977. For the job, the Russians had available the 450-foot ice breaker *Mikhail Somov*.

The *Somov* entered the northern fringe of the ice on October 20. The strategy was to penetrate as far south as possible, collecting data about the ice and the ocean below. (Direct observation of the ice pack has, surprisingly, rarely been undertaken by researchers.) Should on-board satellite receivers show the development of a polynya, the *Somov* would attempt to enter it.

Unfortunately, no polynya formed during 1981. The *Somov* got as far as 62½ degrees south on November 3. Satellite information did indicate lower ice concentrations at 65 degrees south, but the ship was unable to push through. The scientists made at least one unusual find, however: zooplankton living within the ice.

As of this spring, the researchers have no definite plans for another expedition. The mystery lake of the mid-1970s remains a mystery.

Running Hard

You're a man and you're out running. You've been going at it hard, really working. You notice a woman jogging toward you. You also notice that she is attractive. Now stop and ask yourself: Would you like to (a) know her? (b) work with her? (c) date her? (d) kiss her?

If you're like most of the men who were asked those questions in a recent University of Maryland study, you'd say yes to all of the above. The Maryland researchers determined that men who had jogged for two minutes reacted "intensely" to a videotape of an attractive woman, rating her high on likability, sincerity, and sexiness.

The two-minute group's reaction was stronger than that of men who had run for only 15 seconds. (Another good reason to go for distance.) The study also found that men in this "high arousal" state were more turned off by an unattractive woman.

—D.S.

Iron Women, Too

James A. Loessling

The most dramatic moment of this winter's Ironman World Triathlon, held February 6 on the Big Island of Hawaii, came not with the first person across the finish line, but with the 54th: Kathleen McCartney, the first female finisher. McCartney came in 29 seconds ahead of Julie Moss, who had been solidly in the lead until, just a few feet from the finish line, she collapsed. As you can see above, Moss managed to crawl and extend an arm for a heartbreaking second-place finish. The overall champion of the Ironman—a grueling competition that combines a 2.4-mile rough-water swim, a 112-mile bicycle race, and a 26.2-mile marathon—was Scott Tinley, who finished at 9:19:41.

Julie Moss will have a chance to avenge herself again this year, when a second Ironman contest is held October 9 (thenceforth, the annual contest will always be in the fall).

The registration fee for the race will be $100 (not $300, as incorrectly reported in our February/March "Inside Notes"). For more information, write to Ironman World Triathlon, P.O. Box 25861, Honolulu, HI 96825; or call (808) 395-5163.

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Source: https://www.industrydocuments.ucsf.edu/docs/zmwm0004

Wide World

Burying toxic wastes: The EPA reverses a rule, then revives it.

The Latest Word

Updates and other environmental news in this merry month of May:

Nuclear ocean dumping—A year ago we reported that the Environmental Protection Agency was creating a stir by considering whether nuclear wastes should once again be dumped in the oceans. Now the decision has been made. In an announcement made last January, the EPA gave notice that it was drafting new regulations to resume the controversial practice.

The new rules would end a 12-year moratorium on ocean dumping of nuclear wastes. From 1946 until 1970, 87,000 containers of radioactive materials were disposed of in at least 50 dump sites in the Gulf of Mexico and in the Atlantic and Pacific oceans, according to the Sierra Club.

In recent years, the EPA has been meeting more and more state and local opposition to the dumping of nuclear wastes on land.

In a related matter, the EPA in March proposed to reverse a rule that banned the burial of toxic liquids in drums at special landfills. The action permitted such liquids to be dumped immediately. Environmentalists claimed chemical companies had been stockpiling wastes waiting for the reversal.

But only two weeks later, the EPA announced it would revive the dumping ban because it had been overwhelmed by complaints. The new ban allows dumping, but only after dump operators open and inspect barrels. If liquids are found, they must be decanted or mixed with a drying agent.

New name at Interior—What's in a name? In a bureaucracy, plenty. For instance, Interior Secretary Watt has just established a new agency within his department—changing the Conservation Division of the U.S. Geological Survey into the Minerals Management Service (MMS). Some insiders see this as a first step toward turning over the minerals functions of the National Park Service and the Bureau of Land Management's leasing operations to the MMS.

Death by Cactus

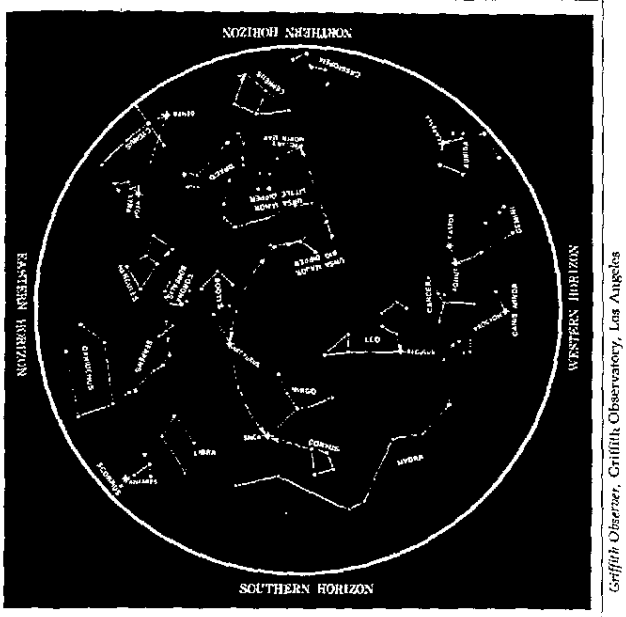
A sad story

David M. Grundman, a 27-year-old man, was out in the desert north of Phoenix last February, passing time with a friend by firing a shotgun at a large saguaro cactus. That's considered a misdemeanor, because the saguaros are protected by law. Grundman paid a high price for his crime.

He had shot one cactus with rifled slugs from his 16-gauge gun and felled it. Then he moved on to another—a 26- or 27-foot cactus—and fired two blasts into it at close range.

According to the friend, Grundman started to shout "Timber!" He had only enough time to say "Tim—" before a 23-foot section of the cactus fell on him and crushed him. Grundman's body was taken to the Maricopa County medical examiner's office, where an autopsy was performed.

STAR GAZING



Griffith Observer, Griffith Observatory, Los Angeles

As you can see in our star chart, several constellations—the Big Dipper, Boötes, Virgo, and Leo—will be overhead in May. Follow the handle of the Big Dipper to find the bright star **Spica** in Virgo and the bright star **Arcturus** in Boötes.

The planets this month turn up in easy-to-observe locations, having moved away from their Grand Alignment. On May 4, **Mars** moves three degrees south of the moon. It will be high in the southeast at sunset. **Jupiter**, also in Virgo at sunset, sets an hour before sunrise. **Saturn** is also in Virgo, near Spica. It is well up in the southeast at sunset and sets an hour or two before sunrise. The full moon occurs on May 8; the new moon occurs on May 23.

—David N. Schramm

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INSIDE NOTES

Air phones—Calling ahead to confirm your computerized campground reservation? Starting this fall, Continental Airlines will be the first commercial airline to offer air-to-ground phone service—at $7.50 for the first three minutes and $1.25 every additional minute. The service will be available only on domestic DC-10 flights, and calls can be placed but not received.

Wildlife films—There's still time to enter your original film in the Third Annual Wildlife Film Festival, sponsored by the International Wildlife Foundation. The IWF is also holding a still-photo contest, with a 19-day photo safari to India and Nepal as the top prize. The deadline for entering both contests is May 15. Write to IWF, 5151 East Broadway, Suite 1680, Tucson, AZ 85711; or call (602) 745-0126.

Fieldwork—Working on an archaeological excavation can be a good way to see a new country, get outside, and do your bit for history. The Archaeological Institute of America publishes an annual listing of fieldwork opportunities, ranging from the continental United States to Israel, Swaziland, and beyond. Some positions are volunteer, some are paid, and many carry academic credit. To receive the listing, send $5 to the Archaeological Institute of America, 53 Park Place, Room 802, New York, NY 10007.

Bear care—For those of you who wrote asking how to help save the grizzly after William Kittredge's "Grizzly Too Close" (December/January): Donations are welcomed by The Great Bear Foundation (c/o Chuck Jonkel, School of Forestry, University of Montana, Missoula, MT 59812), a group that works solely and actively toward saving the grizzly. The Montana Wilderness Association (P.O. Box 635, Helena, MT 59624) and The Nature Conservancy (1800 N. Kent St., Suite 800, Arlington, VA 22209) also work to save wildlife habitat, which directly affects the grizzly's survival. The Conservancy recently set aside a tract of Montana land specifically designated as grizzly habitat.

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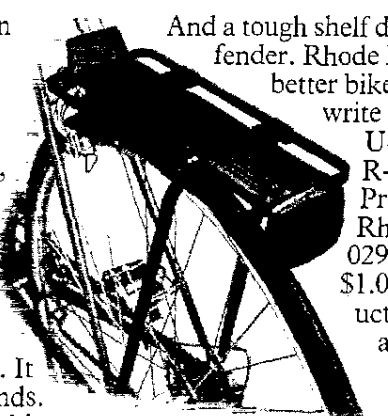

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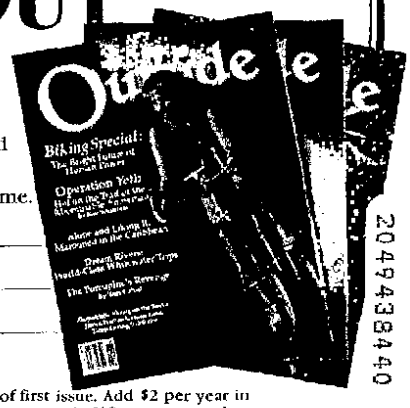

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Sanctuary

William Faulkner and the California condor

By David Quammen

M. Austerman/Animals Animals

The California condor: Is it a bird worthy ?

The greatest and most curmudgeonly of American novelists once allowed as how, if reincarnation were mandatory, he would prefer to come back as a buzzard. "Nothing hates him, or envies him, or wants him, or needs him," said William Faulkner. "He's never bothered or in danger. And he can eat anything." Faulkner said a lot of wild things, even sometimes when he was sober. Most of his own life was spent struggling desperately against convention and complacency and incomprehension and debt, supporting a houseful of hapless relatives, indentured as a Hollywood hack for seven years of his prime, his masterpieces already out of print when he was 47 years old; so maybe it's understandable, his envy for that bird he said no one envied. But if his wistful projection is set upon the greatest and most curmudgeonly of North American buzzards, *Gymnogyps californianus*, then even Faulkner, with his congenital hatred for safe opinions, was never more wildly wrong. Because the California condor, definitely, is bothered and in danger.

And the worst part is this: We don't even know by what, or how badly.

More than 10,000 years before Europeans appeared on this continent, condors were cruising the skies above desert and mountain from Texas to British Columbia. They may have been plentiful in those days, when large carnivores like the saber-toothed cat and the dire wolf were preying on large herbivores like the mastodon and the bison, leaving scraps for scavenger birds. Some fatalistic people choose to believe in this bygone plenitude, claiming on slim evidence that the condor's decline toward extinction has been proceeding inexorably for a hundred centuries. They class the California condor as a "senile species": old and outmoded and therefore doomed. But it isn't necessarily so.

Very possibly these oddly specialized birds—dependent on a meat diet but unable to kill, graceful in the air but clumsy on landing and takeoff, nesting not in trees but in remote mountain caves—were rare even back then, during the Pleistocene epoch, when the living was easier. A man named Reuben Field, of the Lewis and Clark Expedition, introduced them to the modern age on November 18, 1805, by blasting one out of the air with his rifle. Since that date things have gone from bad to worse. In 1953 the leading scientific authority, a Berkeley ornithologist named Carl B. Koford, estimated that in all of America, all of the world, just 60 California condors remained. Today the guess is 30.

The projection for 1995 is zero.

Throughout the past 40 years the extinction of the condor has been looming closer and closer, heartbreakingly predictable, and we don't seem to be capable—by any means applied so far—of halting the trend. Now there is even some questioning, from a vociferous but small minority of environmentalists, about whether we should try. At the Condor Research Center in Ventura, a sophisticated plan has been developed for aiding the condor, a plan that would involve breeding some new birds in captivity (for eventual release to the wild) while studying others (still at large) with radio tracking. David Brower and his organization, Friends of the Earth, are vehemently opposed; the California Fish and Game Department, with legal power to prohibit this plan or sanction it, has also been dubious. One representative of the Sierra Club has suggested that the condor, rather than being held back from the brink of extinction by elaborate scientific intervention that includes captive breeding, should instead be allowed "death with dignity" in the wild. Nearly all other concerned organizations, from National Audubon to the birding societies you've never heard of, favor intervention.

No one can say, of course, what the birds' preference on this point might be. For better or worse, just or unjust, the decision is being made by humans.

When Carl Koford was doing his study, the main concentration of nesting condors was in the canyons around

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Sespe Creek, a rugged outback of Ventura County less than a hundred miles from Los Angeles. From that retreat the birds ranged northward on feeding missions along the crests of the Coastal Range and the Sierra, sometimes as far as Fresno or San Jose, covering (discreetly and from far overhead) an area of roughly 50,000 square miles. With a wingspan of almost ten feet and good anatomical structure for holding those wings outspread over lengthy periods, but only modest musculature for flapping them, the condor is designed for long-distance gliding. A bird might soar off on a 40-mile sweep toward Bakersfield, watching for dead squirrels below, and soar back to its nest before sundown. This extreme mobility over a huge range, along with the condor's reclusiveness, is what makes the species so difficult to study. But Koford was fortunate in having the Sespe Creek area, dotted with nests, where he sometimes observed as many as 30 condors in a single flock. In 1951 the Forest Service proclaimed 53,000 acres of this terrain to be the Sespe Condor Sanctuary.

But during the 1970s, while another biologist studied the condor for the U.S. Fish and Wildlife Service, no flock of more than eight birds was ever observed at the sanctuary. And the chief FWS biologist now assigned to the condor, a likable and impassioned man named Noel Snyder, has never seen, in the Sespe, a gathering of more than three. Through the past 15 years the Sespe has survived any number of threats—a proposed dam, a proposed road, the prospect of oil and gas leasing, of mineral exploration, of continued access to hunters. Today the Sespe Sanctuary contains no oil rigs, no phosphate mines, no dams. No hunters, unless an occasional furtive poacher. No low-flying aircraft buzzing by on the way into L.A. And precious few condors.

> In the Sespe, there are no oil rigs, no dams, no hunters. And yet few condors.

They are dying, from whatever causes, faster than they can be born. Or they are failing to be born, for whatever reasons, as prolifically as they normally would be. Or both. Something is dragging the California condor toward extinction, some factor or combination of factors that are probably human-induced and can possibly be humanly rectified. It might be shooting or poisoning or disturbance of nesting areas or collision with power lines or hunger. But whatever it is, it can't be rectified until it is discovered. And it can't be discovered, argues Noel Snyder, using the old-fashioned, noninterventionist, observational methods. "The birds are just lost in this vast country, and you see them once in a while, but you don't study them just by seeing them fly by. You've got to come to grips with a lot more than that if you're ever going to evaluate what's going on." With diligent spying through the best of high-power spotting scopes, in fact, it's impossible even to determine a condor's sex.

Radio tracking is necessary to reveal patterns of movement, habitat requirements, frequency of breeding, survival rates, and causes of death. Such information should explain why the species is in decline. A limited program of captive breeding is also necessary, because without it the condor population might flicker out to extinction just as the mystery is solved. But these interventionist methods certainly aren't without risk. In June of 1980, just a month after Snyder

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and his colleagues at the Condor Research Center received their permit for the study, one condor chick died of a heart attack while being handled.

That chick represented half of the entire known population of newborn condors for the year. There was hell to pay, and the scientists paid it: Their permit for the study was suspended. For a year and a half thereafter, the condor recovery plan remained in abeyance.

The money was there, and the scientists, and the research plan, but no California permit. (The Condor Research Center is cosponsored by the U.S. Fish and Wildlife Service and the National Audubon Society, with financial support from federal taxpayers and the members of Audubon; the State of California, so jealous of its condors, so fastidious over the permit, contributes not a penny.) Meanwhile, time—and presumably more condors—have been lost. But now, after long negotiations and some diplomatic compromise over the scope and methods of their study, the condor researchers have been allowed to begin again.

Maybe Noel Snyder and his coworkers will be able to discover the condor's problem in time—a parasite, or demented humans with deer rifles, or a poison used on ground squirrels, vacation homes engulfing habitat, DDT, the Los Angeles smog. Maybe they won't. Maybe time will run out. Maybe there simply can be no adequate sanctuary for such a creature at this end of this century in this country. Maybe another chick will die, or two, or several adults, before we find out.

It is a hard call, but aggressive and technological condor research seems to me worth the risk. Koford's observational methods didn't answer the scientific questions that need answering. Forty years of waiting and hoping hasn't helped. And the bird deserves better than a policy of passive euthanasia espoused in the name of allowing it "death with dignity." The condor is *not* a terminal victim of lymphoma. The condor's condition has yet to be diagnosed.

In December of 1950, at a certain banquet in Stockholm, William Faulkner said, "It is his privilege to help man endure by lifting his heart," and he was talking about the role of the novelist, not the role of the buzzard. But the thought applies. It is his privilege to help man endure by lifting his heart. And our privilege likewise to help him, the condor, if we possibly can.

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The Detective

Tracking the murderers of the last mountain gorillas

By Tim Cahill

All around us, on all sides, human beings were threatening us with death. They were threatening us in French, in Swahili, in Kinyarwandan. Jean-Pierre von der Becke seemed oblivious to it all. Von der Becke, a Belgian, holds many positions in the tiny equatorial African country of Rwanda—he is, for example, an adviser to Rwanda's Department of National Parks, and he manages Volcano Park, a refuge for the last two hundred or so wild mountain gorillas left in the world. For the past year, von der Becke has been concentrating on bringing poachers to justice. He is something of a detective: a gorilla detective.

We were walking past the Hotel Mill Collines in Kigali, the capital of Rwanda. About a dozen hawkers stood near the gates of the hotel. They were selling wooden masks, jewelry they insisted was made of jade or ivory, all sorts of cheap and kitschy gimcrackery. At the sight of von der Becke, they had abandoned their stalls and advanced on us. The hawkers were smiling and laughing, but there was no humor whatsoever in their faces.

"We have leopard skins for sale," one of the hawkers said. "Oh yes. Many, many skins. From dead leopards."

"And tons of ivory. From dead elephants."

"Gorilla skulls, from very dead gorillas."

The hawkers followed along after us, ticking off a nauseous litany of dead animal parts they pretended to have for sale. A couple of months ago, von der Becke had been approached by these men. They'd had leopard skins, and Jean-Pierre looked like a typical buyer—which is to say, he was obviously a European. Von der Becke, with no power of arrest in Kigali, had simply confiscated the skins and turned them in to the Department of National Parks, along with the name of the man who had tried to make the sale.

Michael K. Nichols

Von der Becke: a better ideal than money

"Take me to your ivory," von der Becke said. He is 47, fit, tan, trim—and the salt-and-pepper beard looks very good on him. He, too, was smiling and laughing without humor. "Take me to your skins," he said. "Do not doubt that I will buy them, this time."

And now the hawkers stopped their laughing. One stepped forward belligerently. "Why are you the only white man who cares about the animals?" he demanded.

"Oh, but I am not the only white man, and there are many Rwandis too who care about the animals."

"You took the skins. . . ."

"And I'll do it again."

"Do not try. . . ."

"Why not?"

The man drew his index finger across his neck and made a slushy, grinding sound.

"Oh yes?" Von der Becke looked the man in the eye. He drew his own finger across his neck and made the same sound. Everyone laughed and nothing was funny. I got the distinct impression that it would be no fun at all to be a poacher trying to elude Jean-Pierre von der Becke.

"Seems to me," I said later, "that there were death threats exchanged on both sides back there, Jean-Pierre. Sort of a dangerous job you've got here."

"Yes." Von der Becke smiled a genuine smile, full of bubbling and ominous glee. "That's the fun of it."

Von der Becke has had a good deal of fun since he began managing Volcano Park three years ago. Surprisingly, the thick jungles sloping down from the Virunga volcanoes are not a good place to hide. The mud and matted vegetation hold footprints for weeks, and some of the more accomplished Rwandan trackers can follow a trail at night using only a penlight. It has taken some poachers several hours to realize that their arrest was not simply a bad dream.

Last year, park guards—organized as never before, better equipped, fully armed—removed more than a thousand wire snares from inside the park. The snares are used to poach duiker, a dog-sized antelope, but gorillas, especially juveniles, tend to get their hands and feet caught. The great apes have enough power to free themselves, but they often die from the resultant infection.

The people who poach duiker for

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"You couldn't pay me to wear

[illegible] not going [illegible] for any [illegible] sement.

[illegible] mean, it's one thing to romp around in [illegible] wilderness. [illegible] Couloir [illegible] North Face of Mt. Everest—a route [illegible] never been taken before. I've had to choose every ounce of my equipment as if my life depends on it."

THE LEGEND OF THE EVEREST-BOUND BOOT

A few years back, at [illegible] Rainier guide [illegible] Lou operates, he [illegible] guides were [illegible] running [illegible] shoes. "Why?" [illegible] "Because they're a helluva lot lighter and more comfortable than those 8-pound leather leg killers."

Through mutual friends, Lou hooked up with New Balance. "You guys make such incredible running shoes," he said. "Why don't you put that same innovation into a boot for serious climbers?"

And that's exactly what we did.

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this boot up Mt. Everest."

—*Lou Whittaker*

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Just as important as traction is weight. Or, more specifically, the lack of it.

In the past, Everest climbers have reported suffering premature muscular exhaustion long before their assault on the summit. One of the main reasons, according to Lou, was "the lead-weight, vice-like performance of their boots."

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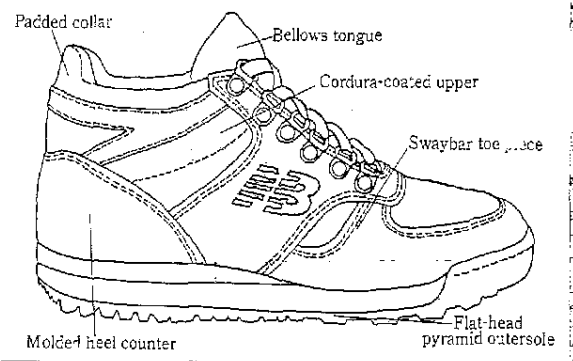
The New Balance Rainier



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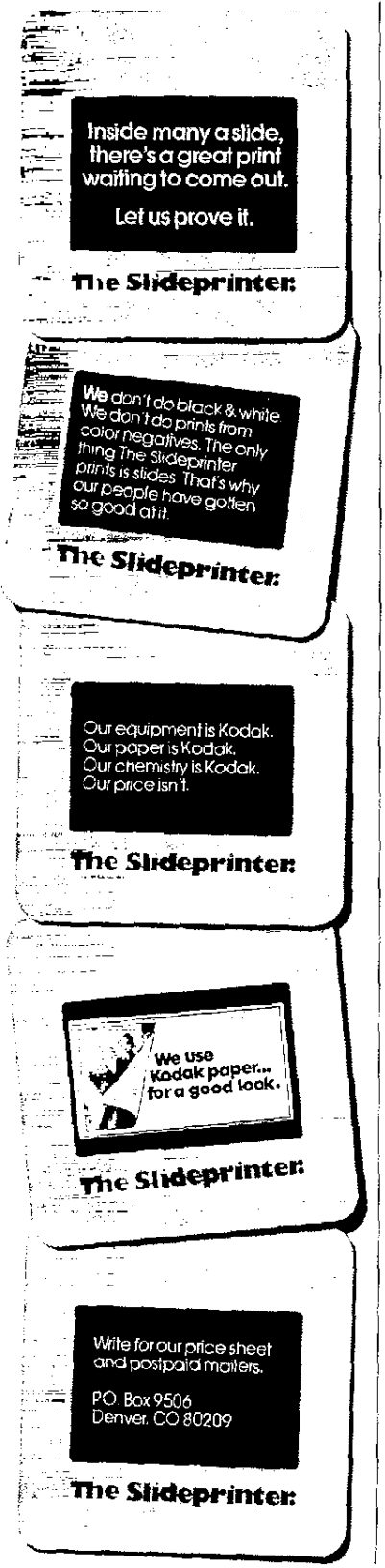

meat may inadvertently harm gorillas, but there are death merchants preying on the park, men who would kill the last gorilla in the world for a profit, and they are the ones Jean-Pierre has set his sights on. The gorillas are placid vegetarians, not much given to defending territory, and they are helpless in the face of a man with a gun. The poachers mutilate the bodies of their victims: They cut off the hands and head, boil them to remove the flesh, then sell the skeletal remains to resident Europeans and tourists. Poachers also kidnap baby gorillas—to do it they must kill the dominant male, the mother, and perhaps one other protective male.

The report of a baby gorilla for sale is serious business, and the poachers are beginning to discover that no one can be safely appoached any more. Just two years ago, poachers offered a baby gorilla to Dr. Pierre Vimont, who happens to be a good friend of von der Becke's. The doctor asked if the men had the baby and if he could see it. Vimont knew from von der Becke that poachers often offer a baby just to test the market. If there is a taker, they go up into the hills and commit the slaughter.

The poacher had the baby, and Vimont asked if he could bring along a Rwandan friend. The friend was Theophile Sebigega, who also happens to be the local sheriff. The poachers produced the baby, and Sebigega produced a group of armed officers. Von der Becke, who was on hand for the culmination of this little drama, took the baby back into the park, where it was successfully reintroduced to the wild.

Some weeks after the encounter with the hawkers in Kigali, I visited Jean-Pierre at his house on the lower slopes of Mount Gahinga, a dormant volcano in the Virunga Range. The old place had once belonged to a Belgian planter, and it must have been elegant in those days. Jean-Pierre was fixing it up, but there were cracks in the ceiling and in the walls, and the floors had warped or rotted away in some places.

Von der Becke spent the first half of his life as a successful businessman. He imported grain, and later aluminum, from the United States to Belgium. One day he had a revelation: "I thought, well, you have to fight in business. And one moment I thought, do I want to fight for money the rest of my life? Is this my ideal?"

Von der Becke quit his job, took a tour of national parks in the United States, and ended up in Berkeley, California, in the late sixties. "Those people," he said, "the hippies, they were very good to me. I did not like all the drugs or the fact they did so little each day. But they were free spirits. They had ideals."

Von der Becke thinks of himself now as a free spirit: a sort of drug-free, hard-working hippie. "My ideal is the preservation of African wildlife. I think it is a better ideal than money."

Von der Becke has gone a long way in the fight for his ideal. I had accompanied him on a three-day antipoaching patrol. We found two old wire snares, badly rusted. We came across one set of footprints, more than a week old.

Two years ago, such a patrol would have come across dozens of snares, and it would have arrested at least one poacher. "So you're having an effect on the problem," I said.

> "Sort of a dangerous job you've got here," I said to him. "Yes." Von der Becke smiled a genuine smile, full of ominous glee. "That's the fun of it."

"Oh yes. But those footprints we found bother me. Do you know how we could keep all poachers out of the park? We just build a trail all around it, and we patrol the trail every day. If we find tracks, we go into the park." He hesitated. "We need money for that trail. For radios."

And then Jean-Pierre von der Becke, the man who didn't want to fight for money, said I couldn't use any of the things he said unless I mentioned the Mountain Gorilla Project, an organization that helps fund the antipoaching patrols. Four international organizations fund the project. In the United States, the African Wildlife Leadership Foundation accepts donations for the Mountain Gorilla Project at 1717 Massachusetts Avenue, N.W., Washington, D.C. 20036.

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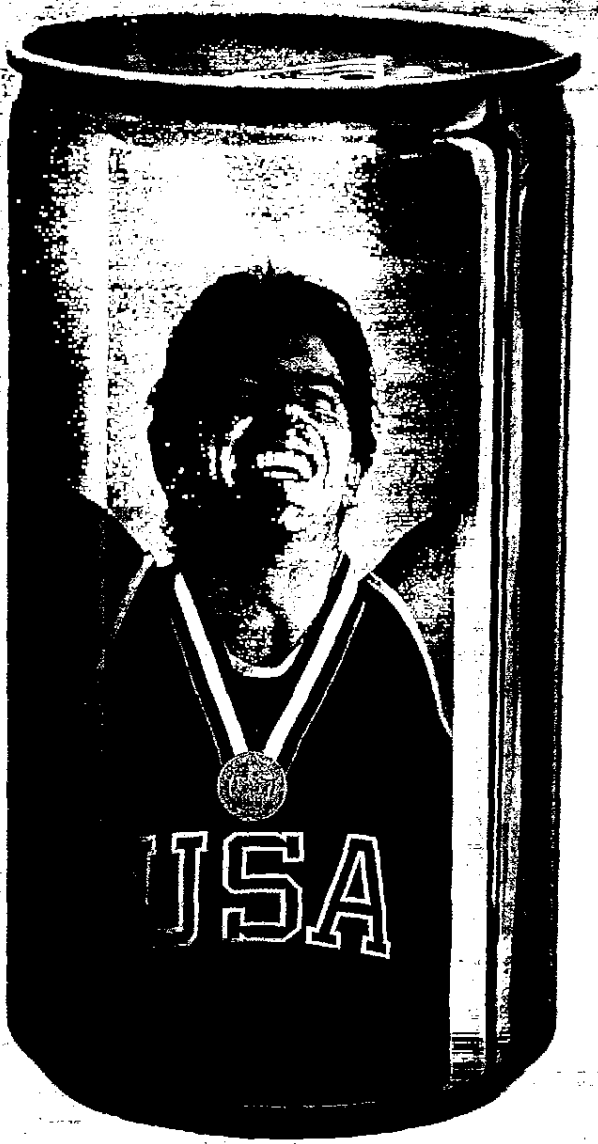

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MESSNER AND HABELER
ALONE AT THE TOP

It was the greatest of all mountaineering partnerships, until it dissolved in anger. Was the cause to be found in the thin air of Everest, or in a case of thin skins?

By David Roberts

The astonished proclamation swept through the climbing world late in 1974: Messner and Habeler had done the Eiger in ten hours. *Ten hours.* The previous best time on the most dreaded wall in the Alps had been almost twice as long. At one point, high on the Eiger's North Face, the two climbers had met up with a party of Austrians, friends of Habeler's, who were on the third *day* of a climb. "What are you doing?" Habeler asked when he found the men still in their sleeping bags. "It's a perfect day, you should be climbing." "We're too tired," came the listless reply. Habeler offered to join the dispirited party; they waved him on. The two strongest mountaineers in Europe continued to stroll up the treacherous wall, reaching the top by three in the afternoon.

The extent of their celebrity was recorded that evening when they got drunk with Clint Eastwood in the Kleine Scheidegg, at the foot of the mountain. (Eastwood was on location for the filming of *The Eiger Sanction.*) A photo was later circulated in the climbing press, showing the tanned and fit climbers arm in arm with Eastwood and the beautiful actress Heidi Brühl. In the photo, Brühl and Eastwood look like admiring fans; Habeler and Messner are the stars.

Gordon Wiltsie

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Nena Holguin

Reinhold Messner

Habeler and Messner (overleaf) against Everest. Messner (left) suffered a defeat on Lhotse.

The next year there was a new focus of astonishment: Messner and Habeler had done a new route on Hidden Peak. Three days, alpine style. No porters. Lots of hard climbing, and they hadn't even roped up. In one stroke, Messner and Habeler had brought an extreme lightweight alpine style, perfected in the lower ranges, to an 8,000-meter (26,000-foot) Himalayan objective and pulled off the ascent without a hitch.

In 1978 Messner and Habeler astounded the climbing world again, this time by climbing Everest without oxygen. Doctors had told the pair they would die; climbers who had been to the top of the world with oxygen had sworn it was impossible without. On the summit Messner had managed to take good photographs. Habeler had glissaded—slid on his heels—most of the way down to the South Col, reaching it an hour after he had left the summit.

Messner and Habeler. In the history of mountaineering there has been a small number of perfect partnerships, pairs of men wedded by an almost extrasensory attunement to each other's gifts, whose combined accomplishments have changed the face of the sport. One thinks of those British pioneers of lightweight expeditionary assault, H. W. Tilman and Eric Shipton. Or of the great postwar French duo, Lionel Terray and Louis Lachenal, with their second ascent of the Eiger North Wall and their brilliant efforts on Annapurna. Or of the Austrian Hermann Buhl and his inseparable partner, Kuno Rainer. (After the first years Buhl did become the dominant partner, and his greatest feat—being the first to reach the summit of Nanga Parbat in 1953—was accomplished alone.)

Since 1960 no partnership in mountaineering has had anything like the impact of that between Reinhold Messner and Peter Habeler. For 15 years the two brilliant climbers from the Tirol—Habeler an Austrian, Messner a northern Italian of Austrian descent—climbed in a transcendent cooperation. Each testified in print that he had found the ideal mountaineering complement to himself.

But the sad fact—perhaps "tragic" is not too strong a word—is that since 1978 Messner and Habeler have barely spoken to each other. An apparently irreparable breach has sundered the perfect partnership. Each man doubts that he will ever again climb with the other. Most ironic of all, the breach is the product not of any quarrels or conflicts that took place in the mountains, but rather of wrangles and jealousies that sprang out of the wilderness of print and film and television.

Peter Habeler is 39. He lives in the small Tirolean village of Mayrhofen, where he grew up, with his striking wife, Regina, and his two sons. Since 1972 he has made part of his living by running the Peter Habeler Alpinschule Zillertal, a climbing school with ten instructors and a perfect safety record. He doubles in the winter as a ski instructor and supplements his income with lecture fees. He has established a great reputation in his home region, becoming Austria's best-known mountain climber. But his fame, until recently, has always been in Messner's shadow; Habeler was the silent partner.

When Habeler was 5, his father died; it was his grandfather, an amateur guide, who took him on his first mountain tours. By his teens he had a local climbing reputation as "the lunatic boy," earned for his solo explorations of

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Reinhold Messner

dangerous glaciers. Not until he was 17 did he gain any instruction from more experienced partners. In 1966, with a much weaker partner, Habeler made the third ascent of the Central Pillar of Frêney on Mont Blanc, a climb that had become famous a few years earlier when a strong party led by the great Walter Bonatti lost four of its seven members during a retreat in a blizzard. After Mont Blanc, Habeler climbed Bonatti's extreme route on the Grand Pilier d'Angle, again with the same, less-skilled partner.

His new partner, it soon became evident, would be Reinhold Messner. That same season, 1966, the two men did their first hard climb together, the Walker Spur on the Grandes Jorasses.

At 37, Reinhold Messner is two years Habeler's junior. But, with the possible exception of Sir Edmund Hillary, he has surpassed Habeler in reputation to become the most famous mountain climber in the world. He manages to spend about two months each year near his home town of Villnöss, in the Italian Tirol, where he has built a cabin that serves as a retreat from his own celebrity. The rest of the year is divided about evenly between expeditions and what Messner calls "working"—lecture tours, lining up contracts, and writing. After each expedition Messner hastily produces a book; each is a European best seller. His entire income—a comfortable one—is derived from sharing his adventures with a vicarious public. It is not an exaggeration to say that Messner is as renowned a sport hero in Europe as Reggie Jackson or Larry Bird is in the United States. One sees his picture in shop windows and in magazine ads.

The second oldest of nine children (eight boys), Messner was first taken climbing by his parents at the age of 5. Like Habeler, he showed an early penchant for soloing: At 14, when his father balked at seconding the first pitch during a climb in the Dolomites, Reinhold dropped the rope and finished the climb alone.

In the late 1960s Messner began to acquire a reputation, first in Europe and then worldwide, for his daring and fast big-wall climbs, many of them first solo ascents. The excellence of those climbs remains obscure to climbers unfamiliar with the Alps, having been eclipsed by Messner's Himalayan exploits in the 1970s. Commenting on Messner's first solo ascent of the North Wall of Les Droites in 1969, Jon Krakauer, an outstanding American ice climber, says, "In terms of sheer boldness, I think the Droites North Face is the most impressive thing Messner's ever done. In 1969 it was the most formidable ice climb in the Alps. He had only really primitive ice tools. It was before the specially curved ice axes or the chrome-moly crampons. In America at that time people were still chopping steps up Pinnacle Gully on Mount Washington."

Messner made an early splash in print with a polemic called "The Murder of the Impossible," an impassioned plea against the overuse of mechanical aids in an attempt to force *direttissimas*, or unnaturally straight lines up mountain walls. "Put on your boots and get going," the article exhorted. "If you've got a companion, take a rope with you and a couple of pitons for your belays, but nothing else. I'm already on my way, ready for anything—even for retreat, if I meet the impossible." The article struck a sympathetic chord among climbers the world over.

In 1969 Messner and Habeler first

Habeler, famous for steep glissades (abo), climbed with Messner on Dhaul[illegible]

Reinhold Messner

Reinhold Messner

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Reinhold Messner

joined on an expedition—to Yerupaja in the Peruvian Andes. There they pulled off a difficult route on the mountain's East Face. The next year both were slated for an expedition to the Himalaya to climb the Rupal Face on Nanga Parbat, arguably the largest wall in the world. During the planning stages, however, Habeler got a job offer at Jackson Hole and had to back out; his place on the expedition was taken by Messner's brother Günther. It was a fateful substitution. After a long struggle the Messner brothers made the summit, but Günther was so exhausted he doubted that he could descend the face unaided. A conversation shouted over a storm, between Reinhold and two other team members, produced a misunderstanding; earlier there had been confusion over flare signals shot off from a lower camp by expedition leader Karl Herrligkoffer. In desperation, Reinhold and Günther traversed *over* Nanga Parbat and descended the easier Diamir Face. Near its base, Reinhold briefly left his debilitated brother to scout the route; upon his return he found no trace of Günther and had to conclude that an avalanche had obliterated all trace of him.

Messner's Nanga Parbat triumph (above) was shadowed by his brother Günther's death.

> Messner has chosen to turn his expedition accounts into almost compulsively confessional tracts.

Reinhold virtually crawled out to the lowlands, where some hill people came to his rescue.

Back in Europe the expedition stirred a controversy. There were accusations that Messner had sacrificed his brother to his own ambition, that he had secretly planned the traverse to redound to his own glory.

Messner's toes had been so severely frostbitten on the Nanga Parbat climb that one big toe and parts of seven others had to be amputated. After such surgery, few climbers are ready for further ordeals in the cold, but Messner plunged right back into mountaineering. Two years later, in 1972, he was again involved in a major controversy. On the first ascent of the South Face of Manaslu, like Nanga Parbat a Himalayan 8,000-meter peak, Messner left a weaker partner to go to the summit alone. A blizzard trapped that man along with three others near their highest camp; in their efforts to save each other, two of the team members perished in the storm. Once again Messner was accused of sacrificing partners to his ambition—even though his comrade had insisted, as he turned back, that Messner go on to the summit alone.

Messner continued his quest for 8,000-meter summits at the pace of at least one a year. There were failures on Lhotse, Makalu, Annapurna, Nanga Parbat, and Dhaulagiri (the last with Habeler), but there were the stunning successes on Hidden Peak and Everest. Along with his achievements, Messner's books began to create a sharply etched public persona. It was clear that modesty was not Messner's forte. The first of his books translated into English was called *The Seventh Grade* (1973). Its title implied that the conventional six grades of climbing difficulty were all but obsolete in the face of routes being done in the Alps. Of his own climbs, Messner wrote, "I would venture to ascribe Grade VI or VI+," adding with some

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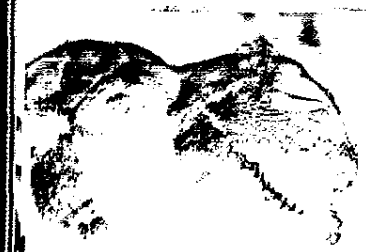

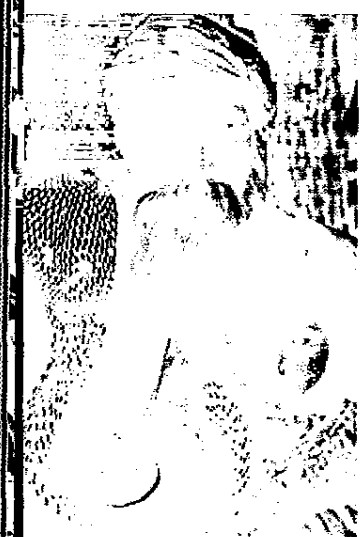

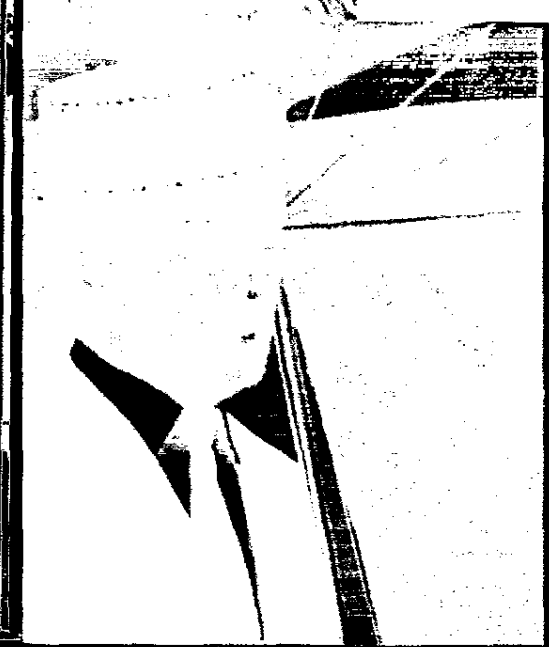

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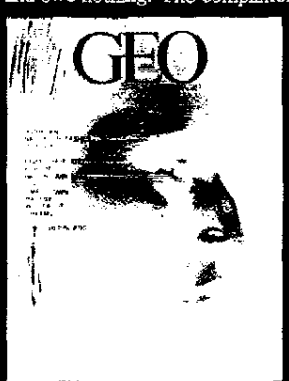

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coyness, "I would be fascinated to see who would be the first to climb a seventh-grade route."

In *The Big Walls* (1977) Messner updated a famous 1949 article by Anderl Heckmair that identified the "three last problems of the Alps" as the north faces of the Matterhorn, the Eiger, and the Grandes Jorasses. The "three great faces of the world," Messner declared, were the Eiger, the South Face of Aconcagua in Argentina (which he mistakenly claimed was the biggest face in the Western Hemisphere), and the Rupal Face on Nanga Parbat. After the Rupal Face, he declared, "a significant advance is no longer possible." Messner emerged as the only man to have climbed all five of the great faces.

An avid nonclimbing public seemed to buy Messner's self-congratulation. In his *Everest: Expedition to the Ultimate* (1978), he ventured the opinion that an attempt on the world's highest mountain without oxygen was so radical an idea that "in the Middle Ages we would have been burned as heretics." About his next Himalayan scheme, an unsupported solo ascent of Nanga Parbat, he asserted, "This is my last great alpine dream. Indeed it is the last great alpine idea."

With each successive book, Messner also became more confessional about his private life. Along with the external struggle against rock and ice, readers were offered the details of his inner struggle with self-doubt, fear, and loneliness. An integral part of his stories was the anguish of his five-year marriage to Uschi, who had left her first husband, a Nanga Parbat teammate, for Messner. But in the next few years she had grown increasingly vexed with his mountain obsessions.

Perhaps partly in reaction to Messner's flair for self-publicizing, some climbers began to gossip that Habeler was really the tougher climber of the two. During his four-year stint in Jackson Hole, Habeler had climbed with a few top American mountaineers, including Yvon Chouinard and George Lowe. (He had also teamed with Englishman Doug Scott to make the first non-American ascent of the Salathé Wall route on El Capitan.) The Americans were impressed. Galen Rowell recorded a story about Habeler and Lowe in the Tetons:

> Lowe invited Habeler to join him on a new route he had been eyeing up the direct north face of nearby Mount Moran. Hiking at high altitude in the backcountry almost every day, Lowe thought he was in excellent condition—until he tried to keep up with Habeler, who consistently outdistanced him on the steep approach to the climb. When they reached the cliff, Habeler began climbing unroped with a rucksack. Lowe, breathing heavily, tried to keep up. At one point he came to an overhang and saw Habeler waiting for him above it. Lowe tried it, backed down, and asked Habeler for a rope from above. "Are you sure? It's not that hard." Lowe said that he was sure, and without further discussion Habeler passed down the rope. Lowe tried it again and fell off—held, of course, by Habeler's belay.

Some climbers began to gossip that Habeler was really the tougher climber of the two.

David Roberts

It was undeniable, however, that when Messner and Habeler got together, extraordinary deeds were done in the mountains. In *The Big Walls*, Messner wrote: "In all my climbing career I have not known a better partner than Peter Habeler, and although we have made relatively few climbs together, we have always come out of them in perfect harmony." With prophetic irony, he added: "That we have a sympathetic partnership is also demonstrated by the fact that neither of us has felt the need to criticize the other, or underplay his role, after any of our climbs. How often one gets the impression from climbing reminiscences and attendant gossip that years after a major Alpine enterprise one of the participants is seeking to take more than his share of credit, as if to eclipse his former partner."

Whence, then, the feud? Looking back, Habeler thinks the conflict had begun to emerge by 1978, on Everest. "We never had problems," he says, "as long as I was not making anything out of myself. He was happy, and I was happy. But we were not as close friends on Everest as we were in 1976 or 1977. For some reason, something had started already. And I am not sure, but I think it could be connected with my work as a lecturer. I was giving many lectures, I had the opportunity to tell many people [about our climbs]. It seems to me that Reinhold simply wants to be number one, and he doesn't want anybody to be beside him. As long as you told him, 'Well, you are number one,' it was just fine."

The catalyst for the rift—perhaps even its cause—was Habeler's decision to write a book of his own about Everest (*The Lonely Victory: Everest*, 1978). "In the beginning," claims Habeler, "he did not object to the things that I wrote. But the fact that a book by me was written at all, that was very, very hard for him. Furthermore, my book was first on the market. It is a simple book. It is not as psychologically deep as Messner's."

Messner's rejoinder is that Habeler's book was not written by Habeler at all, but rather by a ghost writer and journalist named Eberhard Fuchs. Fuchs's help is acknowledged in the German edition of *The Lonely Victory*, but the name does not appear in the English edition. "This Fuchs," says Messner, "knew a little bit about climbing, and he was a psychologically well-educated person. He knew exactly what other people would like to know about me. Or what they would like to have happened on the expedition. The critics, they were waiting for it. And they are still using it against me.

"On expeditions," Messner says, "everybody is free to do what they like. Afterwards [Habeler] can sell a book or not sell a book, that's not the problem. I don't know if he had a contract before or not. That's not so important. But I think that if he's discussing the other personalities, he has to pay at least as much attention to his own personality. He sells my problems, but not his own.

"And there is one sentence in the book that makes me so upset that I say, I can never understand why he let his

Habeler (at [illegible]: a confirmed husband[illegible]ter [illegible]in[illegible]er's [illegible]ment to [illegible]ge.

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editor write it. He says that in my books I do not speak in the right way about *him, and that I* more or less used him in the last years. And so I thought, 'Please don't let me use you in the next expeditions. Do your own expeditions, what you like, but please don't come on my expeditions.' "

The offending passage in Habeler's book is, apparently, the following:

> Reinhold has set this all out [the details of their climbs together] in his books, even if the reader may gain the impression that he was the leader and I was simply a passenger. However, I don't feel bitter about this—the books sell better that way. The applause of the general public is not as important to me. But Reinhold needs their recognition. He likes to appear on television; he needs the interviews. . . .
>
> There is a photograph which shows me on the summit of the 8,068-metre-high Hidden Peak. Reinhold took it, simply because I got there first. The picture was published everywhere with the caption, "*Reinhold Messner conquered the Hidden Peak.*" Friends and acquaintances often ask me: "Why do you put up with this? Have you no ambition? All your common ventures simply become a one-man show for Messner!" Others might have reacted differently—I just let it pass. After all, I would not have reached the summit without Reinhold, and he wouldn't have reached it without me. We are both equally good. . . .

What else could have provoked Messner's fury? Habeler, who seems the more regretful of the two, suggests another possibility: "Reinhold's the toughest guy you can think of, but sometimes he has a moment when he gets very, very tired. About halfway up Yerupaja in 1969, he said, 'I have a stomach problem,' and I said, 'Well, O.K., let's wait a little bit and then we go on.' Until then we were always changing the lead. From that point on I was leading, naturally. Because I knew if I get sick, he will lead. There was no point making a fuss about it.

"On Hidden Peak I was much stronger, but there is also a reason. He had just come from Lhotse and he was very tired. And maybe he had problems with Uschi. At one stage he told me that maybe he would have to go back because he felt funny. I am sure it still bothers him that he arrived on the summit of Hidden Peak three-quarters of an hour later than I did. It doesn't bother me, but maybe it bothers him.

In contrast to Habeler, Messner has pursued an expedition pace of extreme intensity.

Messner (above): intense yet aloof, impatient but guarded; denies superlatives . . . but . . .

"Don't get me wrong. Reinhold was always the one who started an idea. He said, 'O.K., Hidden Peak would be something we can do.' I was really difficult to get started. He had to come and fetch me. When we were on our way, I was usually a little bit stronger, which doesn't mean anything. Every day is different. It could be, just by chance, you feel a little bit better that day.

"At the South Col on Everest, he got out of the tent first, he did the first few meters, and then I passed him. I kept going, breaking the track, all the way to the South Summit." Habeler laughs. "I have pictures to prove this, but it seems not important to me." Habeler does say in *Lonely Victory* that Messner was the first on the Main Summit.

But some other incidents that took place on Everest are described differently in the two books. High on the mountain, Habeler began to draw downward-pointing arrows in the snow at regular intervals. Messner's account explains it this way: "We converse in sign language. Every time Peter scratches a downward-pointing arrow in the snow, meaning 'We should turn back,' I reply with another pointing upwards—a discussion without words." Habeler rejects this interpretation. The arrows were markers for the descent—like the willow wands climbers sometimes leave to indicate their trail. To anyone with expedition experience, Habeler's explanation makes more sense.

Messner describes his snow blindness at the South Col after reaching the summit, mentioning the agony he felt and that "the tears help to soothe the pain and Peter comforts me as if I were a small child." But according to Habeler, the two had made a pact that if one got in trouble, the other would think only of rescuing himself. Now, snow-blind, "Throughout the night Reinhold screamed with pain, sobbing and crying. He implored me again and again, 'Don't leave me alone, Peter. Please, you must stay with me. Don't go; don't climb down alone without me!'" The next day Habeler led Messner down the Lhotse Face.

Obviously, this is no superficial spat. It has been magnified and scrutinized in the European press, with the probable effect of exacerbating the bad feelings. Both men allude to attempts at reconciliation, but they still have little to say to each other.

David Roberts

Habeler has not climbed in the Himalaya since 1978, although he is planning a small expedition to some peaks in China on the north side of Everest for fall 1982. In 1980 he went to Mount McKinley, in Alaska, to climb the relatively easy West Buttress route. At 19,300 feet he came upon the bodies of two Germans who had frozen to death. He then found two Czechs blundering about, unable to help themselves. (It was later determined that they were suffering from cerebral edema.) Habeler gave up the summit, and after failing to talk the incoherent Czechs into descending under their own power, he made one of his characteristic descents—from 19,000 to 14,000 feet in a 45-minute glissade—to reach a radio set above Windy Corner. The radio was out of order, but a rescue effort managed to save the Czechs.

Habeler remains impressed by McKinley, and he intends to guide a group of friends on the West Buttress this summer. "It's colder than all the peaks I have attempted in the Himalaya," he says, "and quite serious as well."

At 39, Habeler looks wonderfully fit. His handsome, clean-shaven, weather-beaten face is deeply lined, but it glows with energy. He is short—perhaps five feet eight or nine—with a slender build. But he does have a worry

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about his health—a worry that dates back to the 1978 Everest expedition. One reason that Habeler decided to make his hour-long glissade from the summit to the South Col was that he was terrified about a lack of oxygen—that he might inflict brain damage upon himself. Four years later, he is not sure that damage did not occur. "I know that I now forget many things," he says. "And my concentration is not as sharp. I am sure that attempting 8,000-meter peaks without oxygen is really doing some damage. I also think Reinhold has changed. He is not willing to take any criticism, for example."

Habeler says fame has changed little in his life. "Maybe my time has become a little more limited," he says. "I am proud to say that I am still together with the same friends as I was before all this." Almost inevitably, his thoughts come back to Messner. "Reinhold has changed all his friends; he has replaced them with people who are more important to him now."

As he approaches 40, Habeler seems—if his own testimony can be trusted—to be making just the kind of adjustment to middle age that so many top climbers fail at. "I still find it challenging," he says, "to do something easy, to go on a ski tour. And I *love* guiding, I really do. I don't consider it below myself to guide, and quite often people are amazed at that.

"Last year I lost two very good friends, good climbers, who fell into crevasses here in the Alps. One was married, with three children. That makes you feel so rotten. I do not want to die too early in the mountains. I want to prolong it as long as I can. I still want to do hard routes on nice peaks, but the will to risk my neck is not as strong as it used to be. If I fall off a mountain, to me it does not mean a thing. I come off, maybe five more seconds, and then I am dead. It's my wife, it's my two boys that are left behind. . . .

"I think I know now what I want to get out of my life. I find it very, very nice to combine my job with my hobby. I love to teach climbing and ski touring and to make it possible for people to survive. Life is too valuable to throw it away. I find that I'm happier than ever now being back home in Mayrhofen. The circle will finish again here."

Last summer Habeler's autobiography, *Auf den Bergen der Welt zuhause (At Home in the Mountains of the World)* appeared in German.

In contrast with Habeler, Messner has in the last four years pursued an expedition pace of extreme intensity, and he has added two more astounding "firsts" to his already impressive record. Only weeks after climbing Everest in 1978, he made a solo ascent of Nanga Parbat via a new route on the Diamir Face—down which he and Günther had made their desperate retreat eight years earlier. Rather than stage a traditional expedition, with a team of climbers building a pyramid of camps and supplies, Messner went to Nanga Parbat with only two others—a Pakistani liaison officer and a nonclimbing woman friend, Ursula Grether. Above base camp he was utterly on his own.

> Most ironic of all, the breach was not the product of any quarrels or conflicts in the mountains.

Reinhold Messner

Messner and Habeler (above) perfected a lightweight alpine climbing style.

Two years later he pulled off the same kind of solo expedition on the north side of Everest. This time his only companion was his girl friend, Nena Holguin. He had no climbing partner, no competent Austrian expedition in support. He made the whole ascent alone—and again without oxygen.

In the odd-numbered years, Messner had other successful Himalayan expeditions, though not as great as his more renowned climbs. In 1979 he and Michl Dacher reached the summit of K2 without oxygen. However, their conventionally large expedition had to abandon a hoped-for new route up the Abruzzi Spur, by which the mountain had first been ascended in 1954. In 1981, on his fifteenth expedition to an 8,000-meter mountain, Messner and Doug Scott were unable to climb a new route on Makalu, but they did reach the middle summit of Chamlang, an unclimbed 7,200-meter peak nearby. Messner's plans for this year are as ambitious as ever and possibly more exhausting. A spring attempt on the North Face of Kangchenjunga is to be directly followed by assaults on Gasherbrum II and Broad Peak in the Karakoram; in the fall he will try Cho Oyu from the south. All four are 8,000-meter summits.

Messner spends much of the year on the road, either giving lecture tours or pursuing expeditions. Insofar as he lives anywhere, it is in Bolzano, Italy, near his home town of Villnöss. He and Nena Holguin share an apartment there. Despite his divorce, he and Uschi are still on good terms, and he sometimes stays with her in Munich. He speaks quite openly about his feelings for one woman in front of the other.

Like Habeler, Messner is short (about five feet nine) and slender. He no longer has time to train the way he used to, and he claims that rock climbing would in any event be detrimental to his high-altitude mountaineering, because it would unnecessarily build up chest and arm muscles.

Messner interrupts a question to deny its premise, that he is the world's foremost solo mountaineer. He will deny even that he is its leading high-altitude expert. "If we are speaking about mountaineering, not just rock climbing, I think at the moment [the American] John Roskelley is the strongest one. He's stronger right now than I. At the moment I don't feel so strong," Messner says, breaking into a smile. "I work too much."

Work, at the moment, includes lecture tours of Great Britain, Italy, and Germany, as well as "a big book" on Everest. Because Messner has chosen to turn his expedition accounts into almost compulsively confessional tracts, he invites scrutiny of the obscure personal wellsprings of his drive. A theme that runs through all his writing is fear of loneliness—curious, one would think, in a mountaineer who deliberately inflicts upon himself solo expeditions to the world's biggest mountains. His English biographer, Ronald Faux, reveals that in his early days in the Alps Messner feared lonely bivouacs so much that he would start

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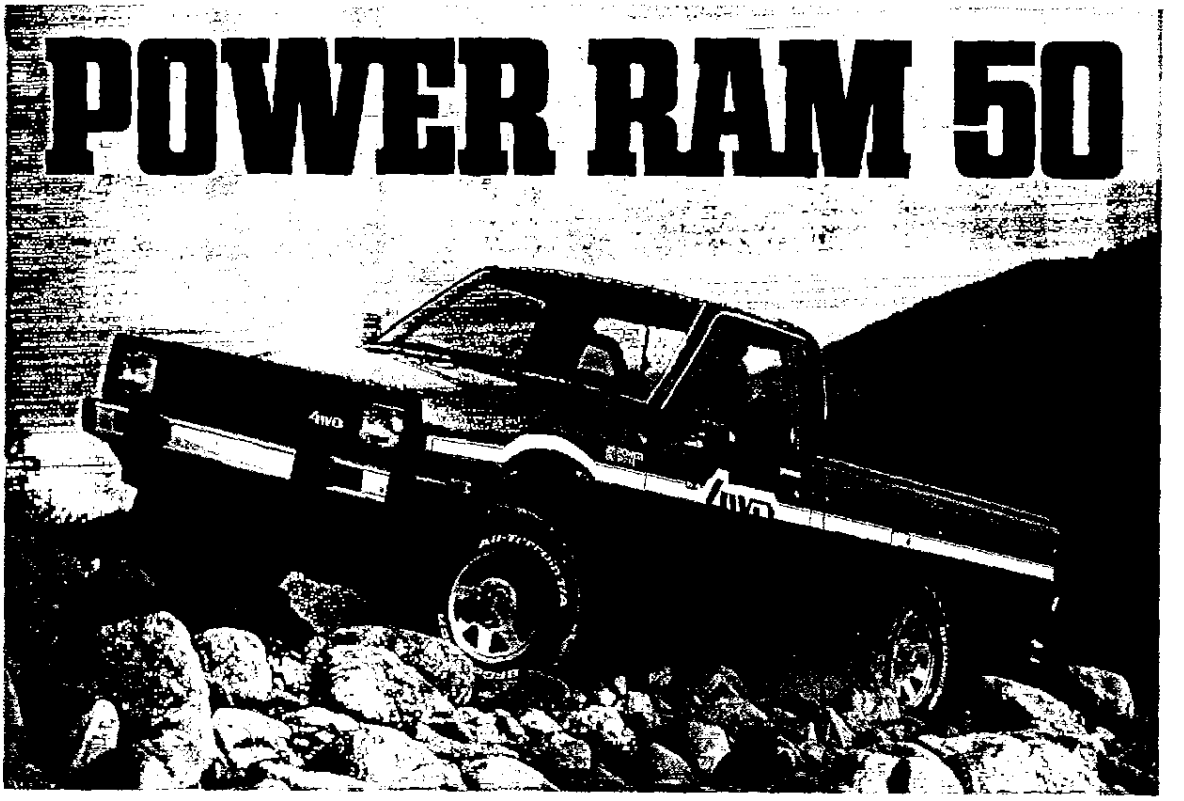
POWER RAM 50



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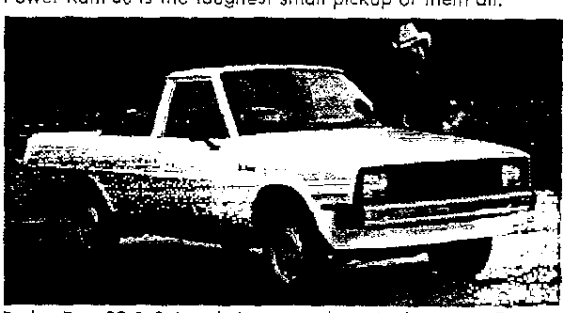
Torque @rpm, lbs.-ft.	139 @2500	127 @2800	129 @ 800
Payload, lbs.	1510	1400	1
Fuel tank capacity, U.S. gal.	18.0	15.9	
Box length, in.	81.5	73.4	72.2
Steering type	Power	Manual	Manual

*Base sticker price excluding title, taxes and destination charges. Price as of 3-15-82.



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DISPLAY FUNCTIONS

- **Speed data** - upper left of display
- **Time data** - upper right of display
- **Distance data** - center right of display
- **Pacing data** - bottom half of display

COMPUTER FUNCTIONS

Miles Per Hour/Kilometers Per Hour Select - displays all speed and distance data in either miles or kilometers

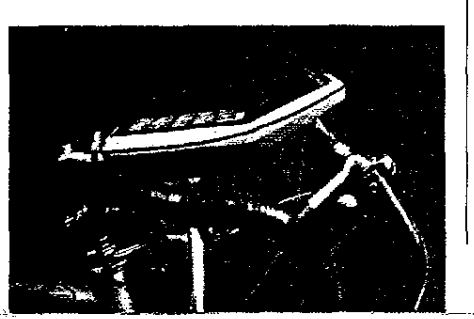
Speed Read-Out - speed is read on two large, 7-segment displays; animated fence posts on each side appear to go by in proportion to rate of speed

Odometer - displays total distance traveled on this trip

Time of Day - 24 hour clock reading in hours, minutes and seconds, complete with AM/PM indicator

Stop Watch - displays elapsed time in hours, minutes, seconds and tenths of seconds

Target Time - targeted time of arrival may be entered as hours, minutes and seconds allocated for entire trip



ETA - displays estimated time of arrival

Alarm Clock - 24 hour alarm clock sounds buzzer for one minute at preset time

Target Distance - used to enter distance to be traveled into computer

Distance Remaining - displays distance remaining to completion of trip; also portrayed graphically on lower index markers as distance traveled vs. distance to completion

Destination Speed - indicates constant speed which must be maintained to reach target distance at target time

Average Speed - shows overall average speed for current trip; may be used as reference against destination speed to show rider whether he should increase or decrease his pace to reach destination at predetermined time

Peak Speed - displays highest speed attained on this trip

Set/Clear - two separate switches used to set or clear Alarm Time, ETA, Target Time, etc.

Tire Size - computer is programmable for tire sizes from 10 inches to 36 inches in diameter; incremented in tenths of an inch, metric conversion table supplied; unit automatically calculates exact circumference value for each wheel revolution (this auto-calibration feature makes placement of magnetic pick-up far less critical than on any other unit of this kind)

Rest/Go - allows rider to interrupt internal trip clock during rest periods so that only actual time spent moving is used in calculating all trip data

Ghost Rider - pacing display on lower half of display provides reference between rider's progress (top triangle), and computer generated "ghost rider" (bottom triangle); computer divides total trip distance into 10 equal parts and gives continuous graphic update of rider's actual progress vs. pacer (i.e. if trip is 20 miles to be traveled in 60 minutes, top triangle would be incremented one space each two miles traveled, while bottom triangle would be incremented one space every 6 minutes)

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SEARCH FOR PERFECTION

In the 1890s they said the bike couldn't be improved. In the 1980s they're not buying that any more

By Kief Hillsbery

In the beginning was the *Célerifère:* two iron wheels that were connected by an oxbow-like wooden spine and surmounted by a padded saddle. Propelled like a scooter by simply thrashing against the ground with the feet, the bike was unsteerable and virtually unstoppable; the young rake who designed it was less interested in transportation than in shattering the composure of the gentlewomen who promenaded in the gardens of the Palais Royale in the spring of 1791.

In that he was successful. Within a year the *Célerifère* was the talk of Paris, and a crew of fashionable young boulevardiers who dubbed themselves *"Les Vélocipèdes"* regularly raced the contraption on the Champs Élysées. After that it was merely a question of mechanics: first, a treadle-driven drive wheel, then pedals, then multiple gearing and a diamond-shaped frame. Barely a century after its fast-feet beginnings, the bicycle as we know it wheeled the roadways of the world.

It's a marvelous machine. No moving object, living or man-made, requires less energy

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No moving object requires less energy to move as much mass over the same distance.

to move as much mass over the same distance. The bike is three times more efficient than a horse, five times more than a car, ten times more than a gull or a jet plane, and a hundred times more than a bumblebee. But it isn't perfect. During hard sprints and steep hill climbs, parts of the frame flex, stealing your energy and slowing you down. The drivetrain, for all its biomechanical advantages, short-changes the powerful quadriceps muscles. And from an aerodynamic standpoint, the high-perched riding position is literally a drag.

Today, after 50 years of complacency and conservatism (why tamper with a sure thing?), bicycle designers are attempting to change all that. In large part, they're following the lead of the International Human-Powered Vehicle Association. Members of the IHPVA have sheathed their machines in aerodynamic fairings, they've broken national highway speed limits by pedaling prone and recumbent and flat on their backs, and they've even crossed the English Channel in a human-powered airplane, the Gossamer Albatross. But the fruits of their labors have tempted few cyclists in the practical world of stoplights and potholes. "What we have now is streamlined and low to the ground," says Dr. Allan Abbott, current holder of the human land-speed record. "You can't run down a street filled with cars in that."

What you can do to close the gap between your machine and the ones setting records is to seek out more efficient components than were available several years ago. Or make your bike slipperier by equipping it with a partial fairing. If you're in the market for a new bike, you can get in on the ground floor of the human-power boom with one of the new production-model recumbents. Or if price is no object, spend $2,500 or more on a supercycle built to failure tolerances long reserved for spacecraft.

In the pages that follow, we'll take a close look at these four approaches to building a better bike. We'll also tell you how to demystify the experience of shopping for an off-the-rack bike, and explain why buying a custom machine may make good sense. And by the end, we think you'll agree that the ordinary two-wheeler—already the most efficient form of transport devised by man—is in many instances becoming extraordinary.

FRAMES

NO PLACE FOR HEAVY METAL

The tubing from which bicycle frames are made has changed very little since the establishment of the Patented Butted Tube Company by A.M. Reynolds in 1898. The composition of the steel now includes such strengthening agents as chrome, manganese, and molybdenum, but the process of forming it remains unaltered. Even Reynolds superlight 753 steel/chrome/vanadium alloy tubing represents little more than a variation on the familiar theme, and because it's easily damaged in minor crashes it's suitable mainly for record-attempt racing.

"That the current steel frame is so well designed is no accident," says Gary Klein, a Chehalis, Washington, craftsman who builds what are widely regarded as the finest bicycles in the world. "The basic design work was done early in this century. Any flaws were realized and corrected long ago. The more advanced technologies were not available then, but if they had been we would likely be riding on something very different from steel today."

Perhaps. Carbon graphite and boron fibers, for example, are demonstrably stronger than steel, but the only fiber frame ever to go into full-scale production—the Exxon Graftek—turned out to be too whippy and quickly vanished from the bike shops. Titanium frames from Speedwell and Teledyne suffered a similar fate; thin-walled titanium tubing couldn't handle stress, as American racer Jacques Boyer learned during a road race in France when his Teledyne frame cracked and pitched him headfirst over the handlebars.

At present, bikes made from alternative tubing are rarities, and they're all quite expensive. Gary Klein's aluminum/magnesium/silicon alloy frames completely eliminate energy-sapping flex in the bottom bracket (the structure through which the crank axle passes), and weigh a full pound less than steel frames. In their priciest incarnations Klein's bikes cost upwards of $5,000. Klein reinforces critical frame parts with the same type of boron fibers used in spacecraft, and his expanded diameter Power Tubing provides unsurpassed rigidity. The Klein looks a little un-

Robin Kristiansen

The frameset alone on the exotic Klein runs about $2,300, and complete bi[illegible] can go for more than $5,000. Some frame parts are reinforced with boron fiber, used in spacecraft.

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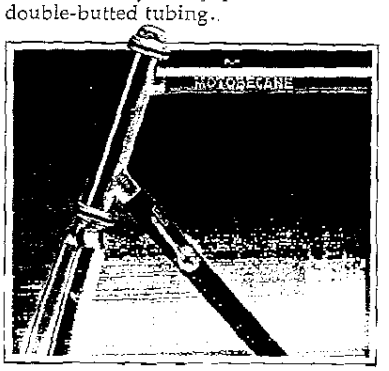
One authority calls the latest aerodynamic components "window dressing."

gainly, but it rides and handles like a dream, even when heavily loaded with touring gear.

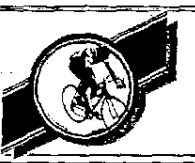
Two other aluminum-alloy frames, the Italian Alan and the French Vitus Super Cadre (also used on the Motobecane Prolight), are assembled from tubing three times the thickness of 531 Reynolds steel. Nonetheless, they're the lightest machines this side of titanium, and the "screwed and glued"—or cemented together—construction provides excellent damping of road shock. (It's also much less expensive than the tungsten/inert gas welding process employed by Gary Klein; the Alan and Vitus frames each cost about $600 compared to the $2,300 Klein charges for his deluxe frameset.) Aluminum frames are popular with European cyclo-cross riders, and the rust-free tubing makes them good choices for coastal areas. Unlike the Klein, however, the Alan and the Super Cadre are exclusively intended for racing.

For the majority of the cycling public, however, exotic frames make little sense from an economic or performance standpoint. As was true in the mid-thirties, a bike made from Reynolds 531 tubing is more than satisfactory. Even bikes made from inexpensive straight-gauge tubing (walls of even thickness) costing $200 to $300 are quite serviceable for most touring or sport riding. More expensive are frames from the better-known firms—Reynolds, Columbus, Vitus, Ishiwata, Tange—that use recipes incorporating chrome, manganese, molybdenum, or other high-test metals. Bikes made from double-butted alloy tubing (walls thicker and stronger at stress-prone tube junctions) start at about $400. If you want your next bike to be the last one you buy, plan on one with double-butted tubing.



David Arky/Cloverdale Press

Motobecane's cemented aluminum frame, at $600, is an alternative to the inert-gas welded Klein.

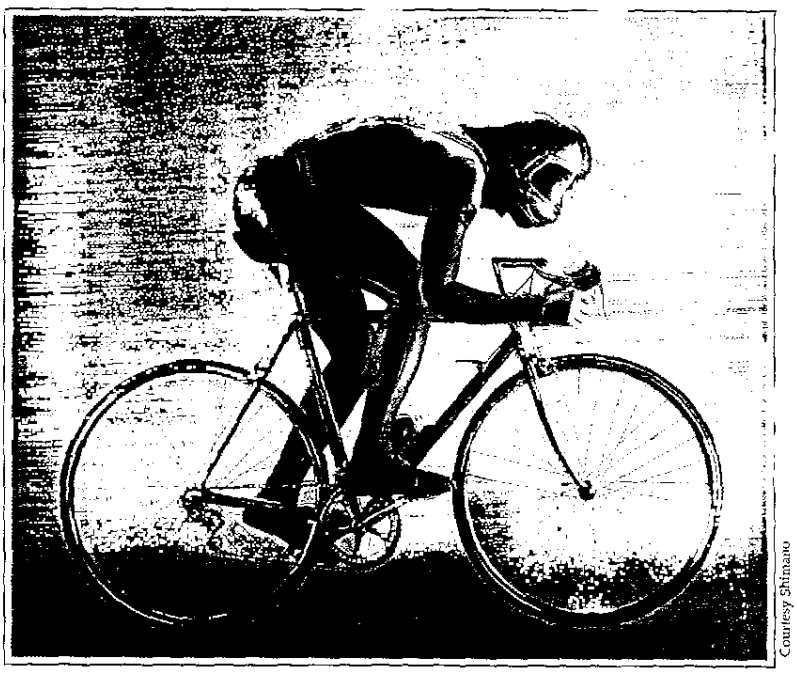


AERODYNAMICS

THE SLIPPERIER THE FASTER

Heavy or flexible frames may help sabotage a bike's inherently efficient design, but nothing stands in the way of performance like the wind. The harder you pedal, the more energy you expend overcoming wind resistance. Even when you're sauntering along at just ten miles an hour, nearly half your effort is nullified by wind drag. The latest aerodynamic standard bikes are fashioned from oval or teardrop steel-alloy tubing and outfitted with special components originally developed for world land-speed records. Whether such touches as spindleless pedals, low-profile derailleurs, and wheel rims equipped with polyethylene fairings really make much difference remains to be seen. While some cyclists report noticeable—but slight—advantages to aerodynamic components, an authority who asked that his name not be used said, "They're window dressing. With a few limited exceptions—rims, brake cables—they don't speed you up. They should be seen as a cosmetic change."

Shimano, which recently introduced its Dura-Ace AX series of aerodynamic components, estimates that the combination of streamlined hardware and contoured tubing reduces vehicular wind drag by 20.6 percent. Nonetheless, aerodynamic two-wheelers such as the $1,275 Lotus Super Pro and $925 Panasonic AR-6000 Aero clearly fail the cost/benefits test for all but the most committed cyclists. *Bicycling* magazine, after extensive road testing, found the Lotus "a bit faster" than a comparable nonaerodynamic bike and lauded the new Japanese components for their workability. But the evaluators also noted several drawbacks. Shimano's AX hardware, for example, isn't interchangeable with non-Shimano components. If you're ever out of range of a well-stocked bike shop, a sizable stash of spare parts—including binder bolts, brake pads, freewheel cogs, toe clips, and axles—becomes mandatory. Special tools are required



Courtesy Shimano

In wind-tunnel tests, Shimano found its aerodynamic components cut wind drag by 20 percent. Critics say such figures are meaningless on highways, where stray or rider-generated winds are a factor.

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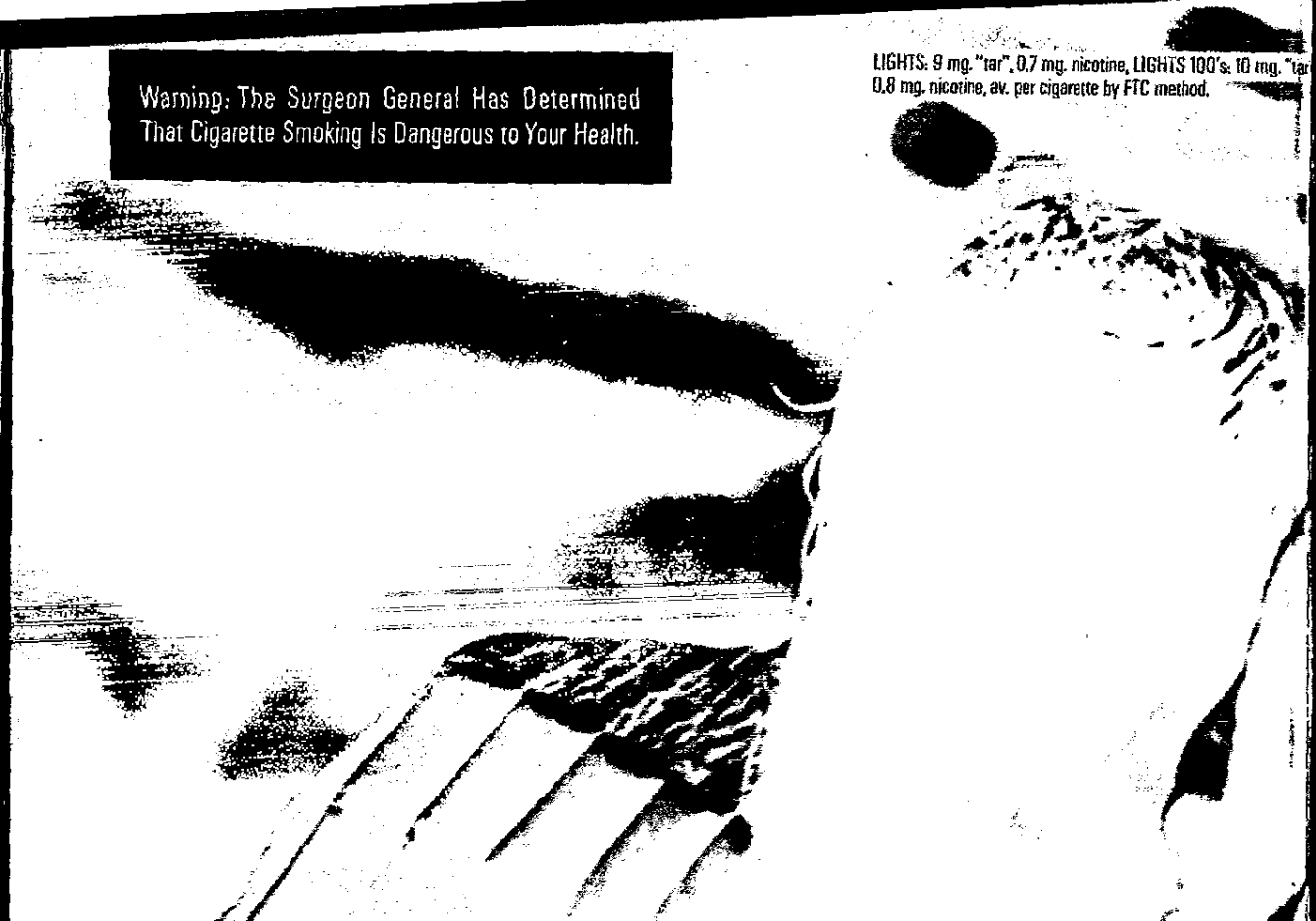

You've got what it takes.

Salem Spirit

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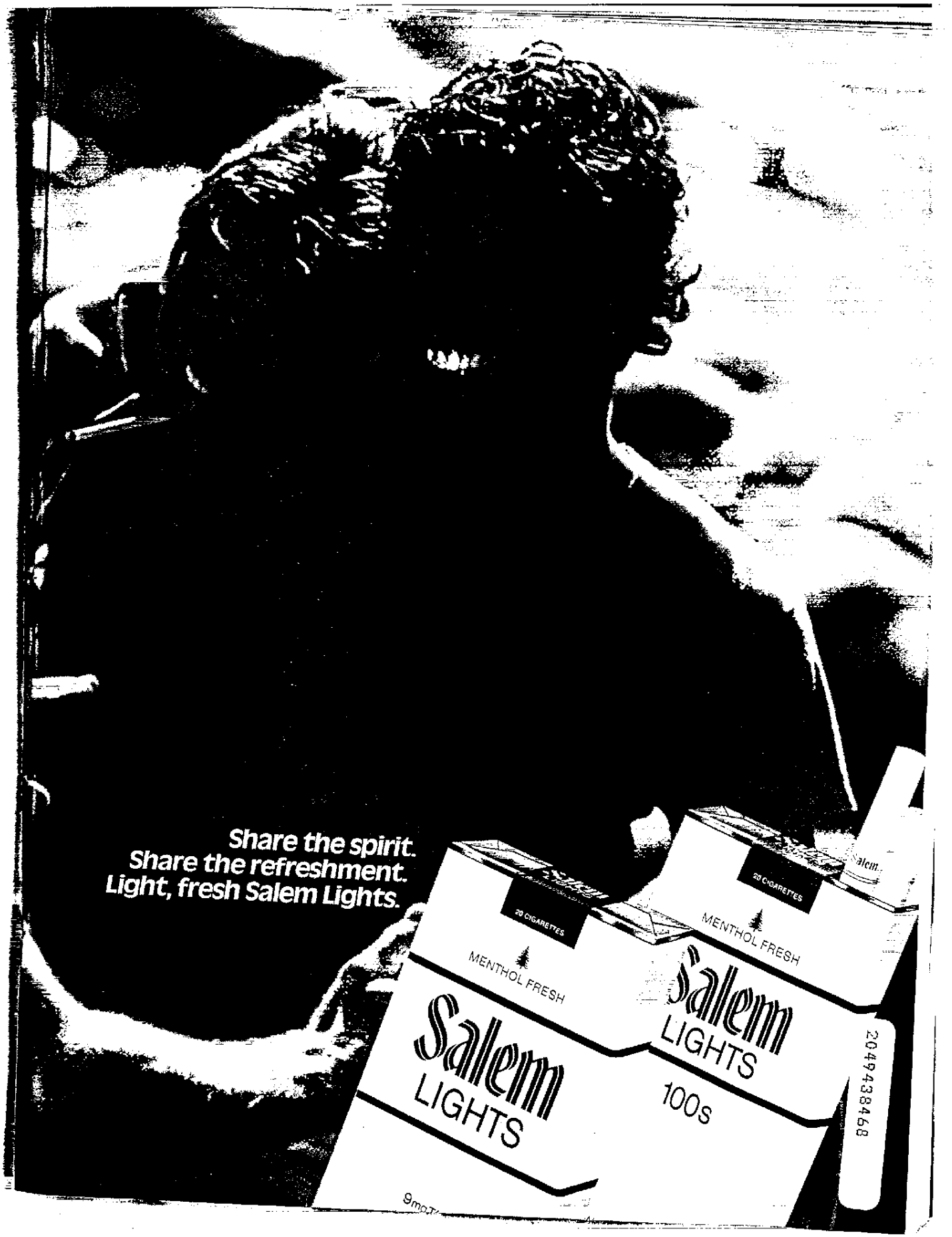

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After several shaky starts on the Avatar, he got the hang of the new center of balance.

for servicing pedals, freehub, and headset. And for all its slipperiness, Tange's teardrop tubing needs an extra pound of reinforcing material to match the resilience of an ordinary round-tubed frame.

Another problem with the new aerodynamic standard bikes is... aerodynamics. However streamlined the machine, the principal source of wind resistance—the rider—remains unaffected. It makes better aerodynamic sense to enclose a bike with a fairing of fiberglass or plastic, but a full fairing creates problems of its own. Balance is trickier, side winds scarier, and maneuverability takes a dive. At last May's human-powered vehicle championships, Olympic gold medalist Eric Heiden escaped unhurt when he overbalanced in a fairing-equipped HPV and went into a roll.

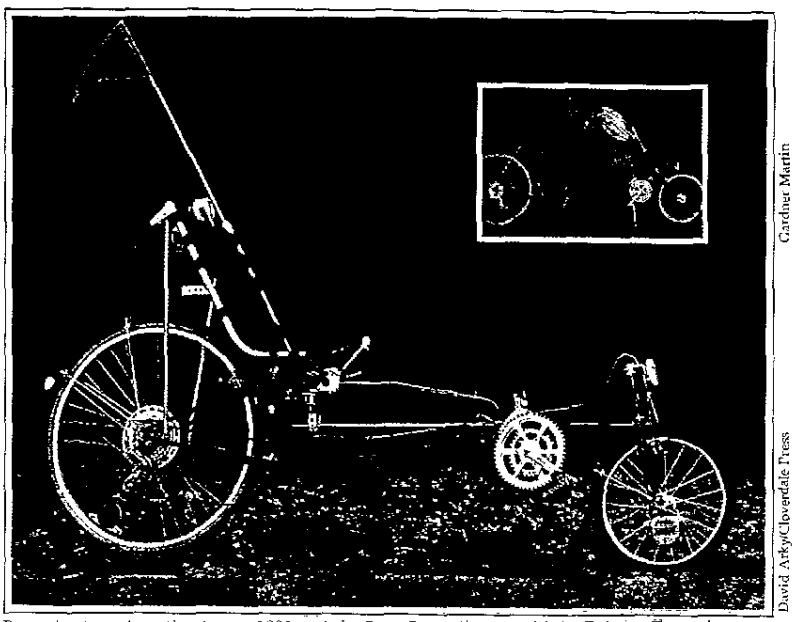
Sally Ann Shenk/*Bicycling* Magazine

Teardrop-shaped tubing is part of the aerodynamic package on the $1,275 Lotus Super Pro.

A partial fairing seems like an obvious solution, but it's just recently that engineers have concentrated on developing motorcycle-style windbreaks for use on bicycles. The most successful design presently available, Glen Brown's Zzipper T road fairing, costs just $59 and offers such a performance advantage that it's prohibited in events sanctioned by the United States Cycling Federation. Made from thin, semirigid Lexan, the 14-ounce Zzipper provides streamlined airflow around the upper torso without sacrificing stability in gusty winds. In a coasting test on a long hill, Brown reached 43 miles an hour with the device and only 35 miles an hour without it.

On a steep hill, of course, a full tuck racing position—elbows and knees joined together, nose over the handlebar stem—cuts wind drag as well as a partial fairing. But when you have to pedal, the Zzipper can make a measurable difference. Data collected by Chester Kyle, a founder of the IHPVA, suggests that at 19.8 miles an hour the device provides a mile-an-hour advantage; IHPVA president Dr. Peter Boor says the Zzipper "allows you to ride one gear higher." Other cyclists have reported speed increases ranging from 5 to 7 percent, and if you want to go aerodynamic without blowing your budget, there's no better investment than a Zzipper T.

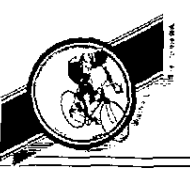
Zzipper T, 458 Thayer Rd, Santa Cruz, CA 95060.



Gardner Martin

David Arky/Cloverdale Press

Recumbents such as the Avatar 2000 and the Easy Racer (inset), with its Zzipper T aerodynamic windscreen, are more comfortable and, according to some, more efficient than conventional bikes.



RECUMBENTS

THE LAID-BACK APPROACH

Whether full or partial, fairings on ordinary bicycles have one aerodynamic failing: high frontal wind resistance. Reduced frontal area is the only remedy, and in the past several years, the performance advantages of low-slung HPVs have fueled interest in two-wheeled recumbent bikes that you sit *in* instead of on.

Even though one design—the Avatar 2000—takes its name from the Sanskrit word for "new beginning," recumbents actually have been around since the turn of the century. In 1932, a French model incurred the wrath of the International Bicycling Federation by outperforming conventional cycles in several road races, and recumbents were banned from further competition. Today, despite controversy over its alleged mechanical superiority, the laid-back riding position is garnering kudos from long-distance tourists, largely because it's far more comfortable than a typical ten-speed. On a standard bicycle, exerting maximum pressure on the cranks requires counter pressure from arms and back, forcing you to pull up on the handlebars while you are accelerating. Because your legs tend to lift you off the saddle, your arm muscles have to hold you down.

On the Avatar 2000 a mesh-and-leather seat braces your back, and your more powerful leg muscles get the brunt of the workout. Your arms rest fully relaxed on low handlebars, and pedals are located way up front, nearly grazing a kiddy-sized tire. John Schubert, who road-tested the $2,100 Avatar for *Bicycling* magazine, found the machine "at

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Campagnolo no longer automatically constitutes the cutting edge in component design.

least as easy to ride and stable as a conventional bike." After several shaky starts he got the hang of the new center of balance and regularly used the bike for highway commuting.

The efficiency of the recumbent design is underscored by the racetrack successes of another recumbent, the Easy Racer. In 1980, a fairing-equipped version of the bike set a world record for a two-wheeled vehicle on a flat track: 32.5 miles an hour. Designer Gardner Martin does not yet sell a fully equipped street version of the Easy Racer, though he is offering a limited number of framesets for $900. For the more self-sufficient, Martin also sells detailed plans for $25, and a do-it-yourself model can be put together from two scrapped ten-speed frames. Martin is also negotiating with a BMX bike manufacturer who may be able to cut the frameset price in half. Although an equipped version of the assembly-line Easy Racer would not be as finely finished as the more expensive model, it would sell for only $750, Martin says.

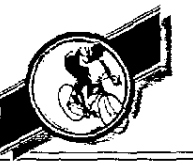
At the bottom end of the recumbent spectrum is the Hypercycle, a $400 bike with a short wheelbase and somewhat limited handling and braking capabilities. Finishing quality isn't up to what you'd expect on a conventional $400 machine, and some HPV enthusiasts feel that in the long run mass-produced recumbents such as the Hypercycle may do their cause more harm than good. But within its limitations—and at high speeds the bike is an accident waiting to happen—the Hypercycle offers a comfortable, attention-getting alternative.

Recumbents do have their detractors, who charge that the low profile is unsafe in traffic and inefficient during hill climbs. But Avatar designer David Gordon Wilson claims that while riding recumbents he has never been beaten up a hill by any other cyclist. Familiarity with the riding position seems to make a big difference. With the Easy Racer, for example, Martin tells buyers to expect a six-month period of adjustment before achieving optimum pedaling efficiency.

Easy Racer, 2891 Freedom Blvd., Watsonville, CA 95076 (information packet $1 refundable).

Fomac Industries (Avatar 2000), 40 Oakdale Rd., Wilmington, MA 01887.

Hypercycle, 2937 S. Vail Ave., Los Angeles, CA 90040.

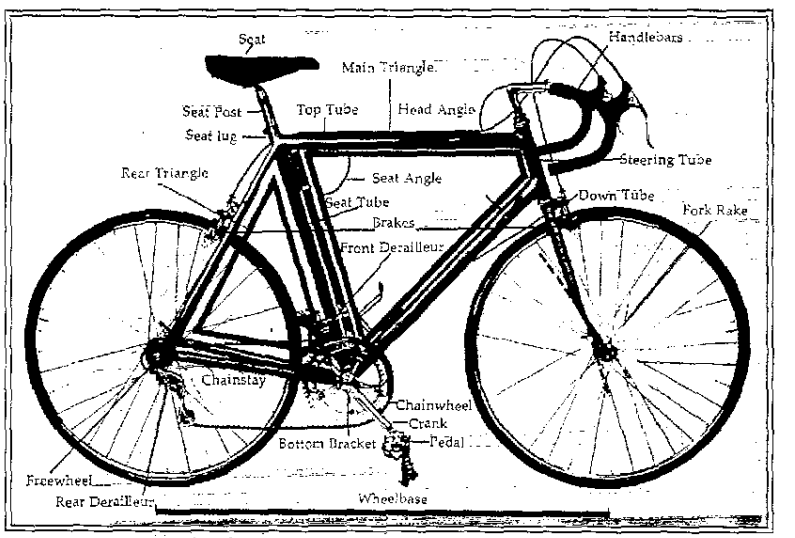


COMPONENTS

OH, THOSE CLEVER JAPANESE

Among the cycling elite, buying a bike is simply a matter of following the rules. The first rule: a lightweight frame of double-butted alloy tubing, preferably inscribed with a euphonious surname from across the water. The second: a drivetrain from Campagnolo/Regina, matched to wheels built around Campagnolo hubs. These are the components that matter most, and no one really minds that they're also among the most expensive items on the market. A quality bicycle, after all, is nothing more than the sum of its parts; and if Italian hardware is missing from the equation, conventional wisdom says, there's something seriously wrong with the arithmetic.

Not necessarily. Although equipment by Campagnolo, Regina, and other Italian manufacturers stands unchallenged for durability, function, and availability, it no longer automatically constitutes the cutting edge in component design. Some of the new technology we survey below—experimental or not—may give the masters a run for their lira in the [illegible]



Knowing the parts: the critical first step to intelligent buying

CRANKSET

Except for a reduction in weight and the addition of more sophisticated gearing, the drivetrain of the contemporary bicycle is identical to the version developed in the 1890s. Larry Brown, a Honolulu inventor and entrepreneur, has a better idea, and in 1979 his variable-resistance Selectocam crankset shocked European racers when it helped American cyclists take second place, 25th, and 27th (out of 1,800 entrants) in the quadrennial 750-mile Paris-Brest-Paris race, the longest regularly held single-stage competition in the world. The chain-driven Selectocam, a spin-off of the earlier rod-driven BioCam, features conventional 15-speed gearing, but one of the three front chainwheels has been reshaped to take advantage of the natural strengths of the quadriceps muscles. At the top and bottom of the power stroke, where the legs have minimal leverage, the Selectocam offers only token resistance. At 20 degrees past the top of the power stroke, the point of greatest leverage, resistance increases, allowing riders to apply more power precisely when and where it's naturally available. In effect, this enables a cyclist to push a higher gear than he or she would be able to without the aid of the Selectocam. Since greater pedaling efficiency—10 to 12 percent, by Brown's estimate—means less fatigue for each turn of the crank, the redesigned

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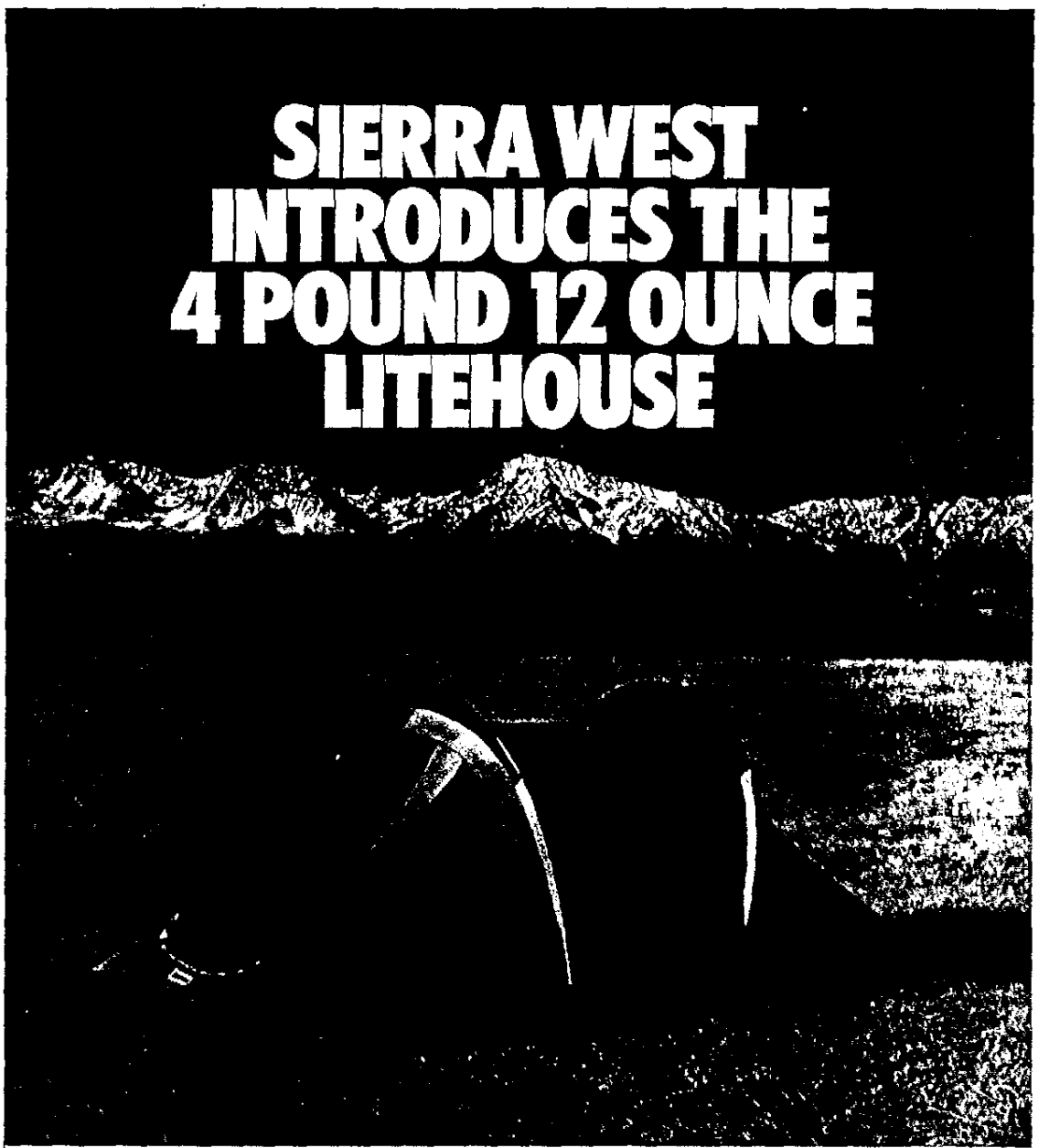

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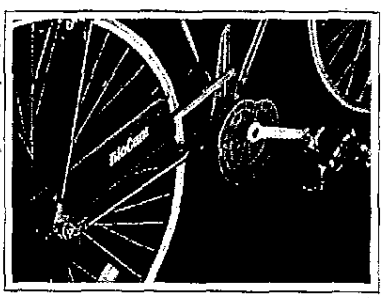
Beware the sales pitch enlivened with tales of Giovanni Galli in the days of Girardegno.

crankset takes you farther faster.

Though the cam has been around for some years now, it has yet to find its way into the mass market in a big way. A Tulsa, Oklahoma, manufacturing firm, Facet Enterprises, was for a time selling a BioCam driven bike for $1,500 ($1,900 for the Campagnolo-equipped deluxe version), but squabbles between Brown and Facet over the design of the cam led to a protracted court fight and Facet's withdrawal from the biking business. At the New York bike show this spring, Brown was still searching for investors and interested bike companies.



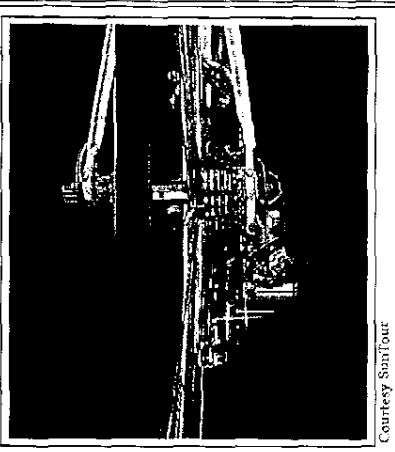
L.R. Evans/Courtesy The Pony Shop

The bizarre BioCam, now a collector's item, was driven by rods, not chains, and had 50 speeds.

CHAINS AND FREEWHEELS

Like cranksets, chains were largely perfected by the close of the nineteenth century. But by reshaping chain link plates and freewheel sprocket teeth, Japanese manufacturers Shimano and SunTour have developed drivetrain systems that provide smoother shifting with reduced wear on derailleurs. Shimano's Uniglide setup employs twist-tooth cogs that help maintain optimum chain alignment throughout the shifting process, eliminating the slippage that ordinarily accompanies upshifting. SunTour's Ultra 6 system relies on beveled cog teeth that match up with bevels on the inner surface of the chain link plates to achieve a similar result.

Fast, solid shifting isn't the only advantage of the improved Japanese freewheels. Shimano's "cassette" model features easily interchangeable cogs, allowing cyclists to create their own gearing. The Shimano design also provides for the use of smaller cogs than are commonly found on other freewheels, and thus allows higher overall gear ratios. SunTour, by projecting the smallest cog out from the main freewheel body, has



Courtesy SunTour

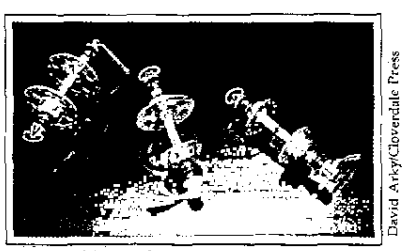
SunTour's narrow-profile Ultra-6 New Winner freewheel can convert a 10-speed to a 12-speed.

opened up enough room to fit a seven-cog cluster into the space formerly filled by a six-cog version; a six-cog cluster may now replace a five. The result is a 14-speed or 12-speed instead of a 10, which helps make molehills out of mountains on a cross-country tour.

WHEEL HUBS

One of the major problem areas in a multigeared bicycle is the rear wheel. Since the freewheel cluster occupies space on the right side of the axle, the wheel must be "dished," with spokes on the freewheel side more steeply angled and the right hub flange much closer to the center of the axle than the left hub flange. This out-of-balance situation places greater tension on right-side spokes and makes them especially vulnerable to lateral stresses.

Campagnolo's solution to the problem of spoke stress is the hi-lo hub. A higher flange on the freewheel side of the hub gives spokes a shallower, more load-resistant angle and permits spoke tension to be reduced. Shimano's alternative to the hi-lo solution is the Unibalance hub. By repositioning ball bearings



David Arky/Cloverdale Press

Campy's hi-lo hub (center) has one high and one low flange to reduce spoke breakage.

inside its integrated freewheel-hub assembly, or Freehub, Shimano engineers were able to move the right-side flange out and achieve the same effect. Shimano estimates a two-thirds reduction in imbalance over conventional wheels; and although the Unibalance isn't *totally* balanced, it's much less prone to vibration and spoke breakage than other wheel assemblies.

Another improvement in wheel design owes its existence to American inventor Phil Wood, who developed the sealed-bearing hub in the mid-seventies. Wood's chunky-looking hubs boast larger-diameter axles and larger hub housings; so they're stronger and more efficient at torque transmission than ordinary hubs. By substituting sealed, precision ball-bearing assemblies for the traditional cup-and-cone arrangement, Wood virtually eliminated the need for maintenance.

SALES TALK

FINDING THE BEST BUY

Before you hit the showroom, draw some distinctions; once there, insist on test riding. Setting a few ground rules and comparison shopping will help you get a better machine, and you'll be less likely to raid your savings just to please some starry-eyed muscleman who enlivens his sales pitch with tales of Giovanni Galli in the days of Girardegno. Spending more than $500 on your first bicycle makes about as much sense as investing in a Lamborghini for a second car.

FRAME

The main consideration is to get the right size, matched to frame geometry that won't make you feel as though you're pushing the handlebars into the roadbed. Frame size is measured from the top of the seat lug to the center of the bottom bracket, and the ideal figure for most riders is about nine inches less than the inside length of the leg, from the crotch bone to the sole of the foot. To a great degree, the way a bike handles and performs is governed by frame

Please turn to page 84

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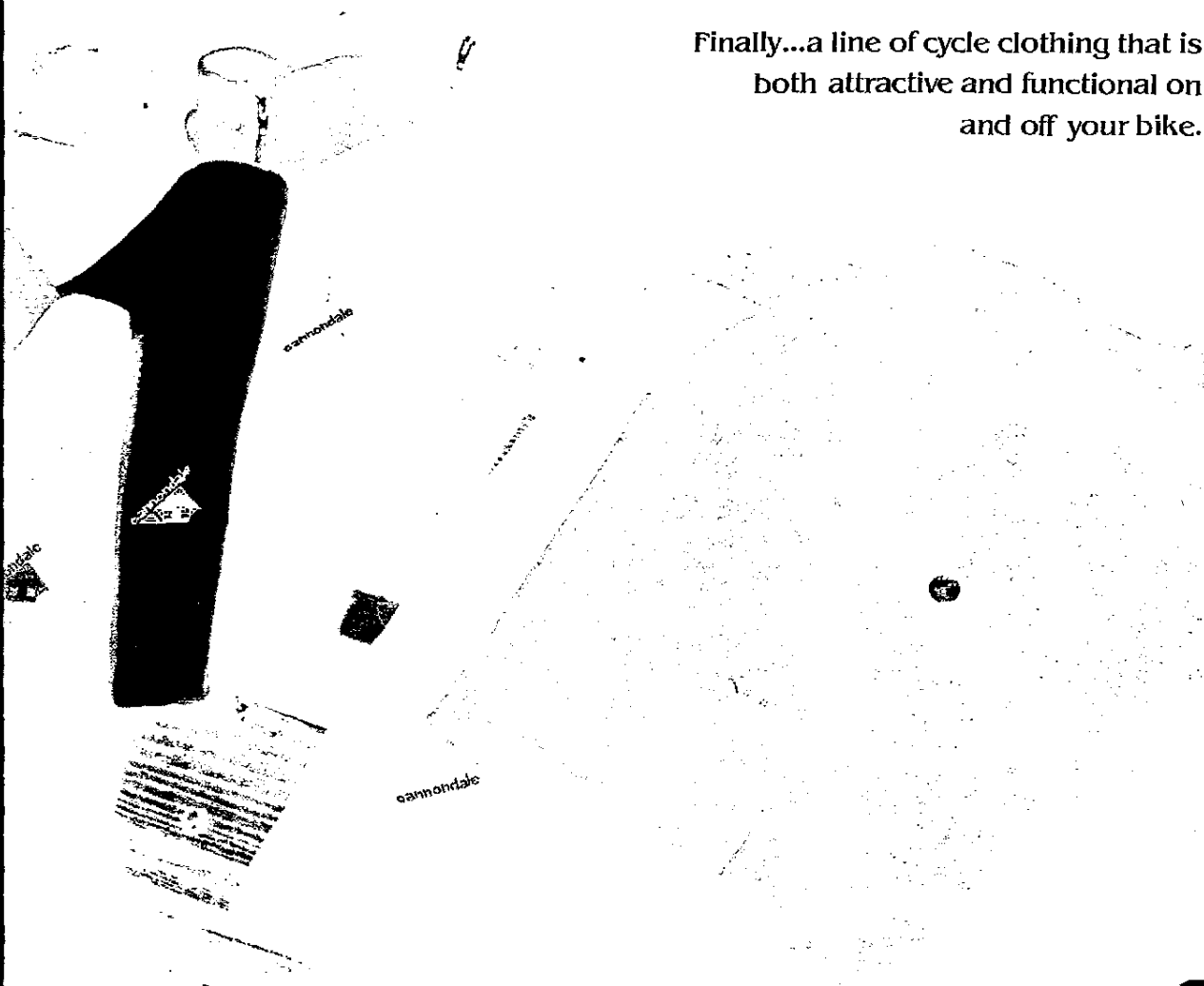
QUALITY FUNCTION

Finally...a line of cycle clothing that is both attractive and functional on and off your bike.



Cannondale has used a cotton/polyester blend to make a unique cycling short that combines style with comfort. They feature a fleece-lined crotch, high cut elasticized back and two side cargo pockets. Co-ordinate these shorts with our jackets, pullovers and 100% cotton cycling shirts in four bright colors for a great *new* look.

Write us for a free 1982 catalog and stop by your Authorized Cannondale Dealer for a first hand look at this great new line of bicycle clothing.

cannondale

USA

Cannondale Corporation, Dept. 57, 9 Brookside Place, Georgetown, CT 06829 (203) 838-4488

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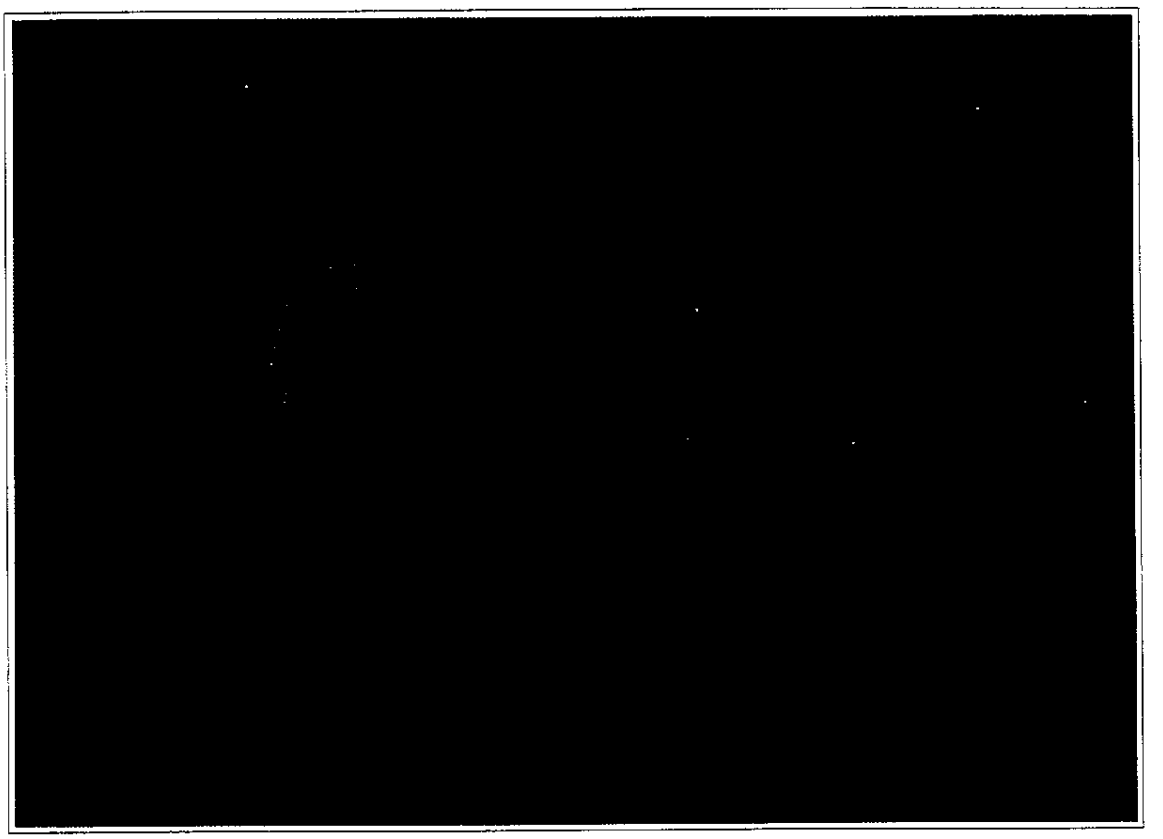

Chuck Davis used the diffused rays of the late afternoon sun to light this photograph of Cousteau cameraman Louis Prezelin surrounded by kelp plants. Davis shot Prezelin from below, in 40 feet of water off Santa Barbara Island.

2049439476

Source: https://www.industrydocuments.ucsf.edu/docs/zmwm0004

Budd Titlow caught the setting sun through a net of salsify plant seed heads by shooting from the ground with a 50mm macro lens. This photograph was shot with the lens wide open at f/3.5 to catch the fading light.

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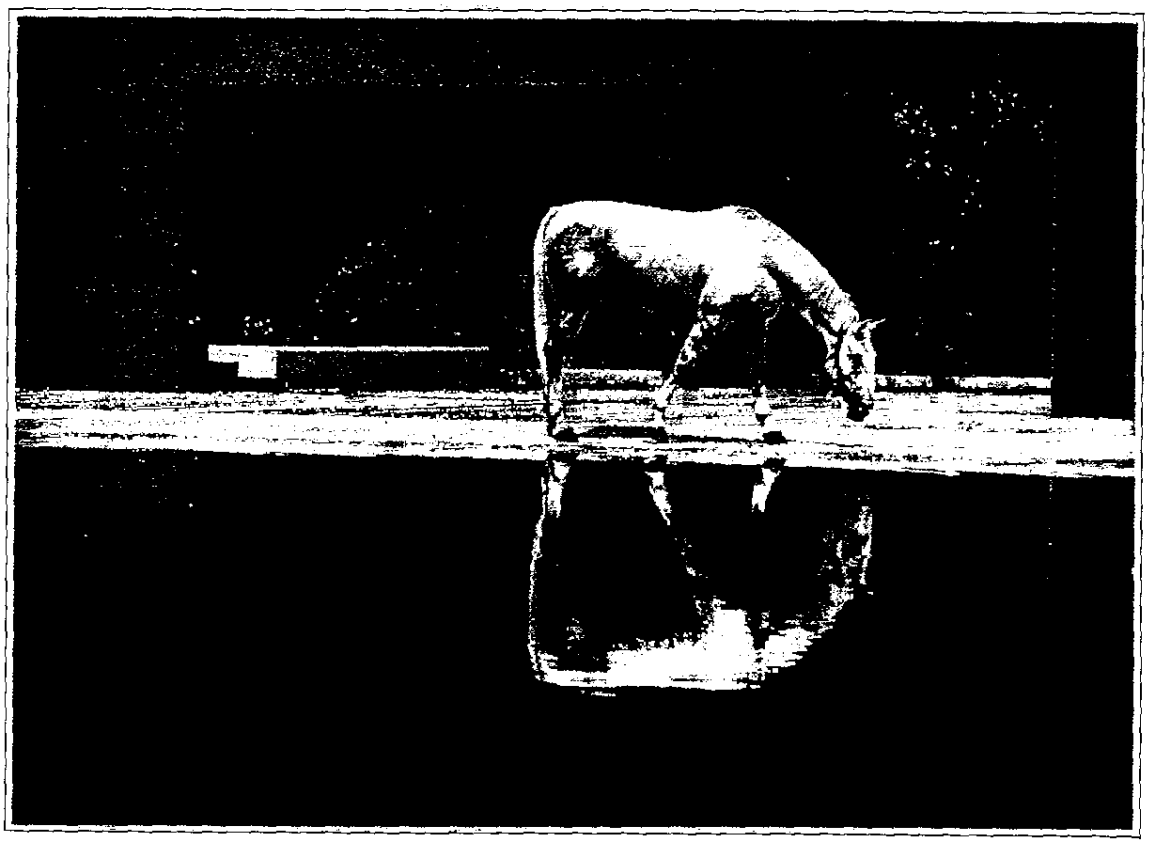
Source: https://www.industrydocuments.ucsf.edu/docs/zmwm0004



JoAnna McCarthy photographed this racing horse, part of her four-year-long photographic series on horses, in the gardens of a breeding ranch outside Mexico City.

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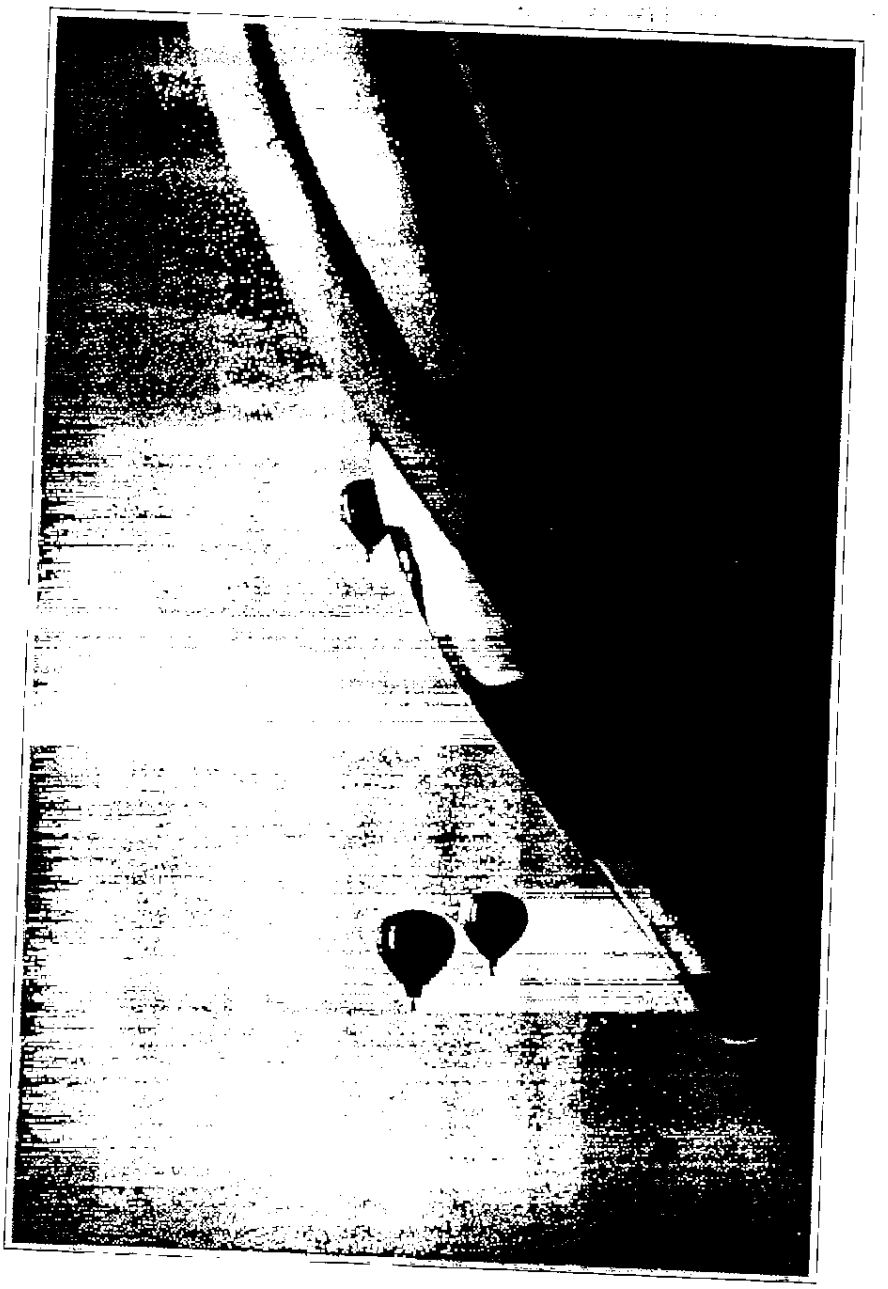
Source: https://www.industrydocuments.ucsf.edu/docs/zmwm0004



Tim Fisher leaned over the edge of a chaser balloon's gondola and used a 200mm zoom lens to photograph competitors in the 1981 World Hot Air Balloon Championship, held in Battle Creek, Michigan.

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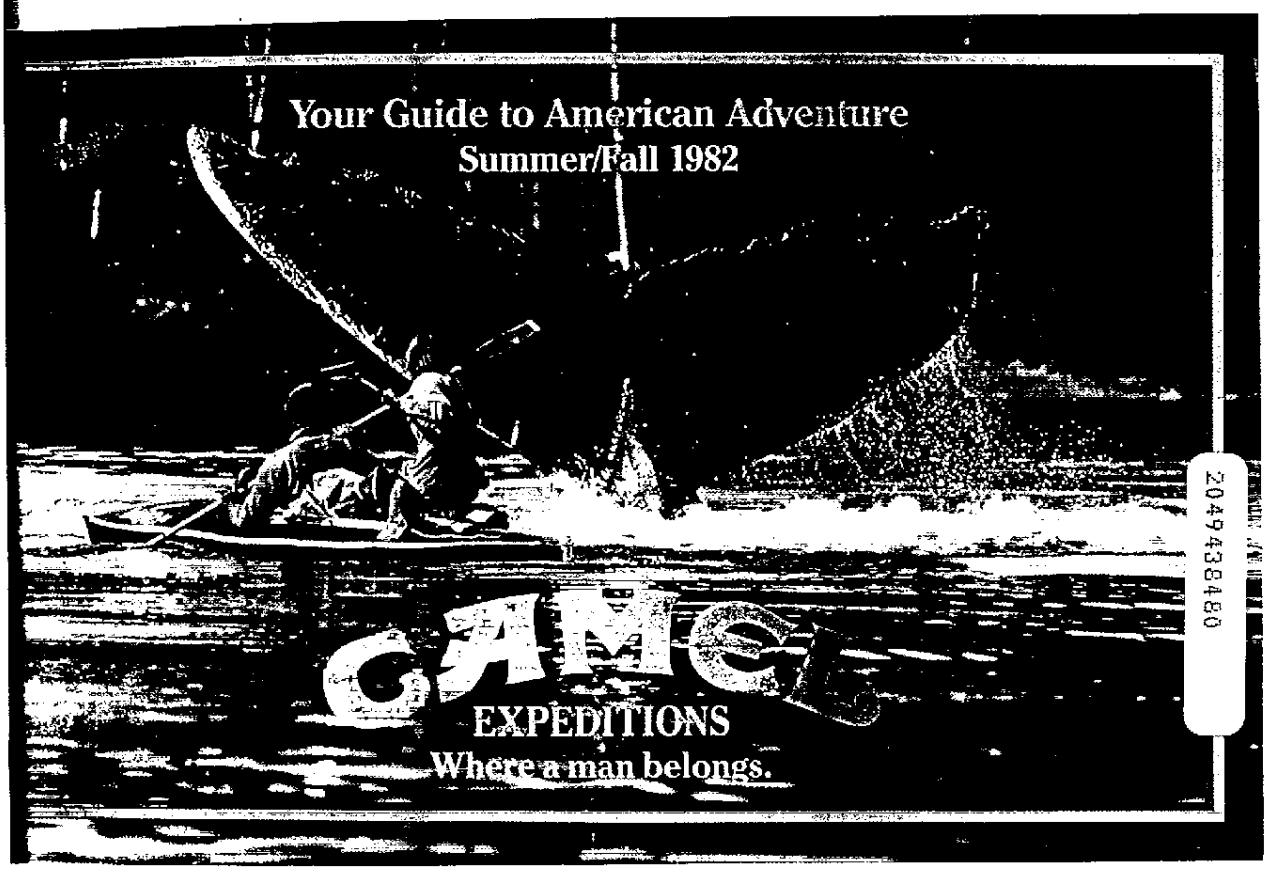
Source: https://www.industrydocuments.ucsf.edu/docs/zmwm0004



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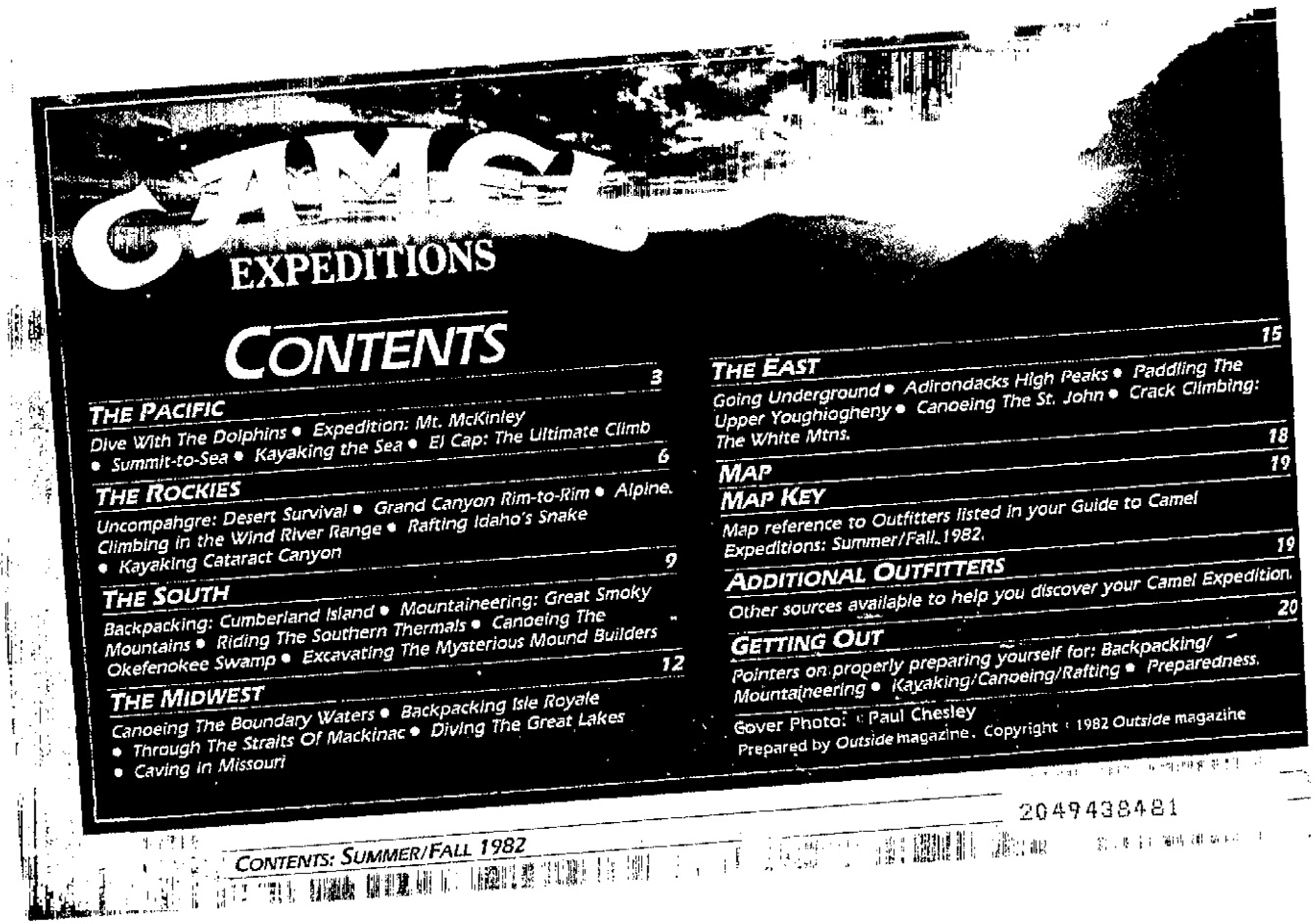

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THE PACIFIC

From the high glaciated mountains of the southern coast of Alaska to the blue lagoons of Kauai, the Pacific states offer the most diverse wilderness areas in the country. Here are isolated alpine lakes, snow-melt rivers tumbling with whitewater and filled with salmon and trout, lush forests with rainfall totaling nearly 20 feet a year, wide, open sagebrush deserts and endless miles of sandy

and steaming
Rainier and
smoking Sta
Alaska's coastal
groans with the move
of glaciers, and the P
smashes the beaches
fornia and Hawaii wit
20-foot waves.

But it is also quietly alive with wildlife: from bald eagles and humpbacked whales to great grizzlies and shy mule deer.

There is adventure here, on the land and in the sea. It is a land for those who seek wilderness experiences on the cutting edge.

DOLPHIN DIVING

Lanai Island, Hawaii. The very name evokes [illegible] beyond typical tropical images of palms, pineapples, and gentle palm-lined coves. Indigo blue curve of Hulopoe Bay, where the clear waters of this marine preserve [illegible] explore recessed caverns and underwater
coral's vibrant
dives dart
ticket compare
[illegible]
[illegible]
[illegible]

EXPEDITION: MT. MCKINLEY

This is North America's finest: Mt. McKinley, a giant block of ice, rock, and snow. Nothing in this part of the world is higher. At its summit, you stand 20,320 above the Alaskan tundra. Even the clouds lie below you.

But "Denali" (the High One) does not yield easily. This is a climb in the heartiest, a 22-day patch demanding endurance, determination, and skill.

From the 7,000-base camp on Kahiltna Glacier, you and your [illegible] the mountain's face, bearing loads [illegible] progression to the next night's camp. Roped together you work on an ever upward route — one camp at 10,000, the next at 14,000, another at 16,000. At 17,000 you are at the High Camp. Only the summit remains.

McKinley is not only high, it is unpredictable. Sudden storms sweep up over its peak, enveloping parties in frozen whiteouts. But when the dawn breaks clear and blue, you have your chance. You rope up, thrust crampons and ice axes deep into the icy crust, push yourself to the last 3,000 feet.

At the summit, there is pure exhilaration — the highest peak in North America is yours.

Outfitter: Mountain Travel, 1398 Solano Ave., [illegible] CA 94706
On Your Own: Mt. McKinley National Park, Box 9, McKinley Park, Al. 99755

SUMMIT-TO-SEA

In the far northern reaches of California, [illegible] thrusting out of a forest of ferns and [illegible], [illegible] the fire-and-ice volcano of Mt. Shasta [illegible]. On a 16-day trip, you'll ascend [illegible] peak, then bushwhack a trail through the surrounding undergrowth and travel down two [illegible] rivers to the sea.

The first day will find you traversing the [illegible] looking off across the green wilds to the distant Pacific. After descending Shasta's western slope, you'll camp by the cerulean waters of Lake Shastina. The Shasta River pour blue and clear from the lake, [illegible] [illegible] inflatable [illegible] to the confluence of the mighty Klamath River.

[illegible] and your partners will then join together in [illegible] the Klamath's whitewater. [illegible] Devil's [illegible], the largest cataract of all, before boarding [illegible] of Requa to shoot the last [illegible] Pacific.

P.O. Box 7007,
[illegible] Jet Boat Kruises,
[illegible] CA 95561

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Source: https://www.industrydocuments.ucsf.edu/docs/zmwm0004

Virginia Morell

KAYAKING THE SEA

Beyond Washington's Strait of Juan de Fuca, the Pacific Ocean breaks against a hundred fir- and cedar-clad isles. Place yourself in an ocean kayak among them and discover a land of virgin forests, curious seals, and soaring eagles.

You'll paddle from white sandy beaches to rocky shorelines, following the ancient trading routes of the Nootka Indians. Or, sailing on a northwesterly, you'll skim over the sea to Johnstone Strait off Vancouver Island, where pods of killer whales will keep you company.

The land is dark green, the sea clear and reflective. Below your kayak streams an underwater world of mustard kelps, magenta starfish, orange-lipped scallops, and succulent abalone.

You'll dive for the abalone and [illegible] clams for dinner. For a morning [illegible] out to the open sea, until your sails [illegible] the great [illegible] swell [illegible]

Outfitter: [illegible] P.O. Box [illegible] Bellingham, WA 98227

On Your Own: Put in along Washington's [illegible] Bay or take your kayak [illegible] the Washington State ferries and travel to the islands of Vancouver Island, then paddle from [illegible] and inlets.

EL CAP: THE ULTIMATE CLIMB

Yosemite Valley, home of the big Wall [illegible] Dome and El Capitan. These are the [illegible] granite giants that have challenged [illegible]

"El Cap" is simply the largest vertical [illegible] of granite in the world. There are a hundred [illegible] up its sheer face, but it is the Salathe Wall, the world's classic climb, you've set your sight [illegible]

With your guide, you'll spend seven days on the upward ascent, placing chocks, fixing pitches, handling belays. At night you'll [illegible] on narrow, flat ledges high above the valley floor. By day you'll climb in a silent world of ice-shaped granite, rich blue skies, sunlight that glints off bits of quartz and mica.

On the sixth day, your guide will lead you out [illegible] wall along a spectacular exposed [illegible] abing at its most daring. It's a [illegible] demanding absolute concentration. But beyond it is the summit. When you finally pull yourself on top, El Cap will belong [illegible] you in a [illegible] belongs to few others.

Outfitter: Climbing Unlimited, P.O. Box 2000-[illegible] [illegible], CA 95705, offers beginning to advanced [illegible] on boulders and rock walls throughout [illegible]

• Strait of Juan de Fuca •• El Capitan

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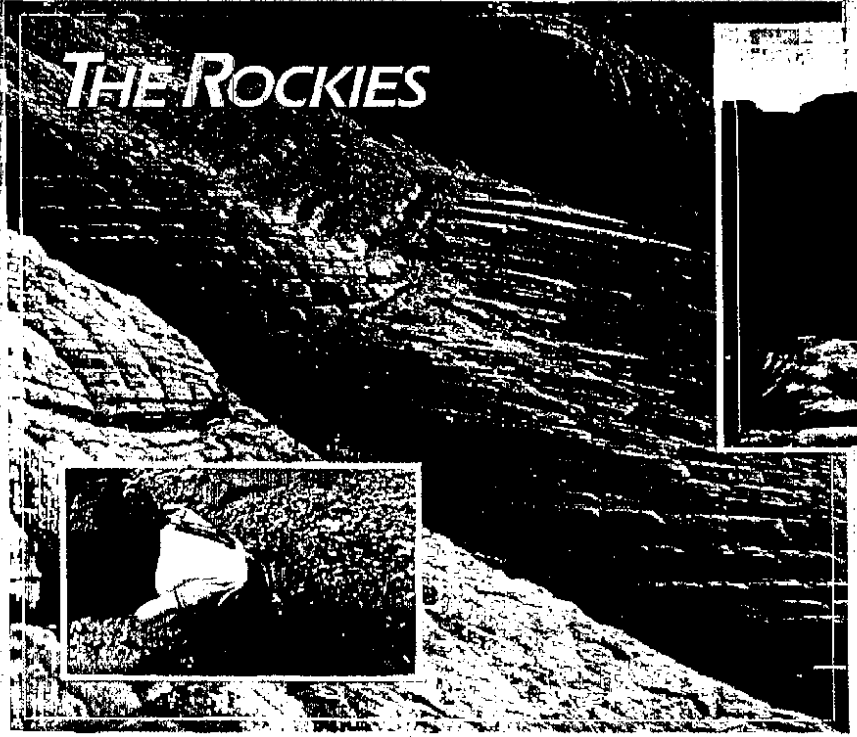
THE ROCKIES



Randy Cox •

Tom Smith ••

Jerry Derbyshire •••

This is a land of big sky, big canyons, big mountains. It is the land that created the Mountain Men — the trappers and explorers who knew how to cross the highest passes of the Tetons, canoe swift-flowing rivers like the Salmon, survive the redrock deserts of Utah and New Mexico. It is demanding country, and the rewards are great for those who meet its challenge.

Beginning in Montana and running south to the Mexican border are miles of open range edged with high peaks: the Colorado Rockies with 54 peaks over 14,000 feet high, the

•/•• Uncompahgre Plateau ••• Grand Canyon

2049433485

minarets of the Tetons, the spires of the Wind River Range. The last grizzlies in the 48 [illegible] states roam these northern woods, [illegible] as the last remaining elk and buffalo herds. Great trout-filled rivers pour down from the mountains, sweeping over the plains and carving the earth into vast, stair-stepped canyons. Sage and pinon fill high desert air with a tangy pungency. This is Canyonlands country — a region of red and gold windswept sandstone, of green and aqua rivers and silent Indian ruins.

In their vast reaches, the Rocky Mountain States preserve what the We[illegible] was.

UNCOMPAHGRE: DESERT SURVIVAL

W[illegible]

[illegible] the Anasazi here, the [illegible] who once called the Canyon home. There are [illegible] and cool, fern-covered side canyons.

You'll stop at the Colorado, plunging in to slake your thirst and wash off the sweat of the trail. At night you'll sleep above the river, letting its sounds relax and revive you.

When you choose to leave the Canyon, you'll strike out for the North Rim on the North Kaibab Trail. Nights are best for this hot ascent, and you'll set out on the 15-mile climb by starting the [illegible] breaks. You'll [illegible] side of the Canyon.

On Your Own

Compass and [illegible] your route [illegible] like cross-country through sandy washes and [illegible] pinon-covered hills. There is sudden beauty in the quiet mornings, the lit of a canyon when in the evening, the inner peace that comes from knowing how to go lightly on the land.

Outfitter: [illegible]

GRAND CANYON RIM-TO-RIM

You'll find a rim-to-rim [illegible] Canyon as challenging [illegible] the [illegible] Inn Spanish explorers — but [illegible] South Rim on [illegible] South [illegible] you'll hike down [illegible] that [illegible]

ALPINE CLIMBING IN THE WIND RIVER RANGE

Nicholas [illegible]

Seven of the largest glaciers in the Rocky Mountains and hundreds of sheer granite spires make Wyoming's Wind River Range an alpinist's ultimate challenge.

For 30 days starting at Trail Lake near Dubois, Wyoming, you'll travel [illegible] trout-filled lakes as you pursue the Wind River's highest peaks. The rugged summits of Fremont (13,730), Sacajawea (13,607), Helen (13,600), and Warren (13,720) offer every technical problem the vertical world can provide.

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and your climbing
seals. With ropes
gain their summits and look out
sed view of ice-covered mood-
boulder fields, and rolling stands
of spruce
But there
view. The
sense of
Outfitter:
On Your Own:

RAFTING IDAHO'S SNAKE

Twisting
narrow
Snake Riv

Swimming below H
countless buckin
rift trip. After en

e Creek rapids, you'll
Hells Canyon

mood relaxes, and the
ing hills. You'll float gently
Natural Area, where 14
ng the rare pelt
e river. There's
peoples, none
nes. You'll sun on warm
ums, back on your

Your take-out is at Heller Bar, near Lewiston, Idaho.

Outfitter: [illegible]
On Your Own: [illegible]

KAYAKING CATARACT CANYON

Just below the confluence of the Green and Colorado Rivers in Utah, Cataract Canyon looks

red-walled and surging with whitewater. Cataract
[illegible] shift of legends, and you'll likely create your
[illegible] lengths.

[illegible] River, Utah, you'll test yourself
[illegible] great cresting waves and
[illegible] for seven days. The river drops more
than 10 feet every mile through this canyon,
creating rapids with names like Satan's Cut, Mac
Long, and Brown Betty.

This is pure action kayaking, and you'll plunge
through boils of turbulent water, cut through the
foaming crests of endless waves, and finally face
the classic Big Drop radio. Here the river spills away
in a roaring 28-foot chute it — and there's nothing
for you to do except nose your kayak right into it.

The Colorado can also be a quiet place, and you'll
tie up your kayaks in the afternoon to explore side
canyons or just watch
the river flow by.

Oar-powered rafts will
carry your supplies, leav-
ing you free as a fish to
[illegible] and surf every
curling haystack.

Your take-out is at Hite Marina on Lake Powell,
166 miles downstream.

Outfitter: [illegible]
On Your Own: [illegible]

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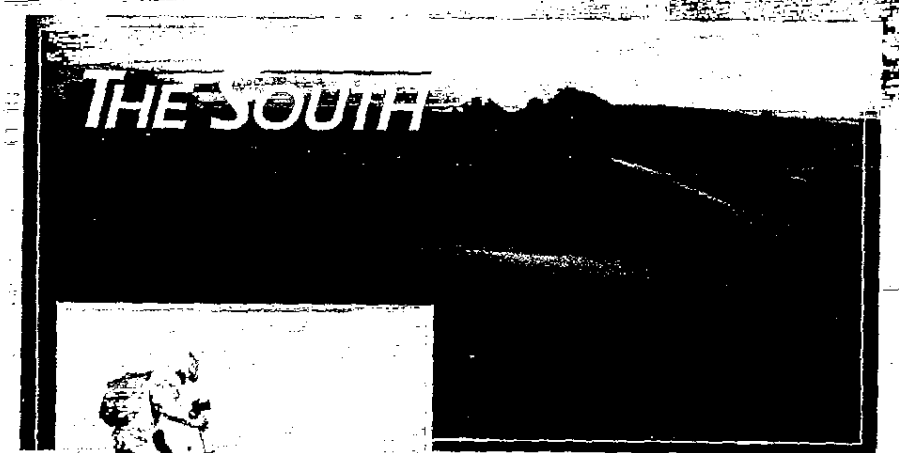
THE SOUTH



Blue mists have hung eternally over the Smokies; the Cherokee christened them the "land of smokes" long before the first pioneer arrived. Mysteries abound, too, in the underground caves that riddle Arkansas's Ozark Mountains; in high-country trails that lead through oak and pine valleys to lost plantations; and along North Carolina's seashore where the pirate Blackbeard sank, taking his treasure with him.

Tucked away here and there are places draped in m[illegible] ilana vines, alive with creatu[illegible] that lurk in swamps and hemlock-covered valleys. In the bayous of [illegible]isiana, Georgia's Okefenokee Swamp, [illegible]orida's Everglades, reed- and vine-choked waterways echo with the calls of ibis and heron.

But for all the secrets and mists, the South is not impenetrable. Fast-moving rivers like South Carolina's Chattooga slash through dense hardwood forests — both challenging canoeists and providing a way to see and know the land. Craggy peaks in the Ozarks and Smokies give wide open views to the determined climber.

Mountains, desert, bayous, and seashore: the South offers adventure as well as mystery.

BACKPACKING: CUMBERLAND ISLAND

The southernmost of Georgia's barrier islands, Cumberland, is a forgotten world of sand dunes, twisted oak and pine forests, swamps, and endless white beaches. A National Park Service boat takes you from the mainland village of St. Mary's to the island. With your backpack, you'll explore the island's secret places and wander its shores for seven [illegible] days.

Mornin[illegible] setting out with your parther[illegible] sandy terrain. Palmettos and magnol[illegible] you during the [illegible] afterno[illegible]

Along [illegible] you'll find fresh oysters [illegible] with wedges of lime. Hours [illegible] wards will be your [illegible] nine hours.

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Source: https://www.industrydocuments.ucsf.edu/docs/zmwm0004

Clyde H. Smith

J. Cunningham

And always around you is the sea, azure and endless. You'll swim in it, walk beside it, hear its waves, watch it change. This is an island world that only a backpacker can know.

Outfitter: Wilderness Southeast, 9521 Whitfield Ave., Savannah, GA 31406
On Your Own: Cumberland Island National Seashore, P.O. Box 806, St. Mary's, GA 31558

MOUNTAINEERING: GREAT SMOKY MOUNTAINS

Virgin hardwood forests, craggy rock outcroppings, and tempestuous rivers: this is the land of the Cherokee and the cradle of the pioneers. And like those hardy men, you'll meet the Smokies head-on.

For a month, you'll climb and bushwhack through America's oldest mountain range. You'll venture into the laurel hills — a jungle of entangled laurel trees and towering rhododendrons. With ropes and pitons you'll gain the summits of jutting peaks to look across 800 square miles of blue-misted forest. There will be camps beside tumbling green streams and dinners of fresh trout.

But, of course, you won't be here alone. There'll be a team of other adventurers with you. Together you'll explore the Smokies — you'll learn where they are harsh and demanding, where they are quiet and yielding. You'll know what the early pioneers faced, and at the end of the trip you'll know more about yourself.

Outfitter: North Carolina Outward Bound, P.O. Box B17, Morganton, NC 28655
On Your Own: The Great Smoky Mountains National Park, Gatlinburg, TN 37738

RIDING THE SOUTHERN THERMALS

There is another wilderness that may be daring explore: the wilderness of the air.

For five days, you'll venture aloft, soaring from the wing of a hang glider. You'll ride the fair

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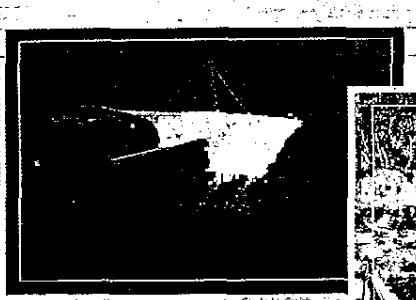
Source: https://www.industrydocuments.ucsf.edu/docs/zmwm0004



Clyde H. Smith

Kurt A. Emmanuele

reaches of the Cumberland Mountains as few have seen them.

With a good running stride, you'll catch the wind at Zirks Peak, then glide with your kite over the sheer rock face above the Potomac. Thermals, the light-twisting energy of air, will carry you to 5,000, then 7,000 feet.

For hours you'll drift and [illegible] over valleys, meadows, and [illegible] boundary of [illegible] wing, land s[illegible]

Outfitter: Kitty [illegible] Nags Head, N[illegible]

Canoeing The Okefenokee Swamp

Dip your people in the [illegible] Georgia's Okefenokee Swamp [illegible] off on an adventure in some of America's [illegible] country.

On a week-long canoe voyage, you'll make a swamp-crossing of 100 miles in this 400,000 acre primeval waterland. Called the "land of trembling earth," the Okefenokee is a mix of peat covered prairies, cypress and black gum forests, and island hammocks.

Starting at Billy's Lake in Stephen Foster State Park, you'll drift under moss-covered cypress trees, travel through the mistletoe forest and paddle down the black Suwanee River. Along the way you'll watch herons and egrets at their stealthy art of fishing, and warily eye the bumpy heads of half-submerged alligators.

Sunsets will find you camping on platforms raised in the middle of the swamp. The evening's flaming oranges and pi[illegible]s cast across the swamp's dark waters are not to be missed.

Outfitter: Wilderness Southeast, [illegible] Whitfield Ave., Savannah, GA [illegible]
On Your Own: [illegible] Okefenokee National [illegible]

Excavating The Mysterious Mound Builders

Some 3,000 years ago, an unknown tribe of early native Americans labored to create a huge bird-like mound in northeastern Louisiana. After completing this giant effigy, they surrounded it with other, smaller mounds and a semi-octagonal series of earthen ridges. Here they held celebrations and festivities; lived, cooked and slept here for hundreds of years — and then, they disappeared.

Were these people related to the Mayas as some bel[illegible] an ancient astronomical observatory [illegible] elaborate temple for hunting fest[illegible]es and sacrifice? No one yet knows. But on a two-week archaeological expedition to the mounds of Poverty Point on the flat banks of Bayou Macon, you'll have a chance to help excavate the area around the mounds and perhaps help piece together their meaning.

Working with archaeologists and fellow team members, you'll map and survey the region, excavate housing structures, firehearths, and cooking pits. At night, you'll watch the stars shine over these strange mounds, and wonder again about the ancient ones who lived here so long ago.

Outfitter: Earthwatch, 10 Juniper Rd., Belmont, MA 02178

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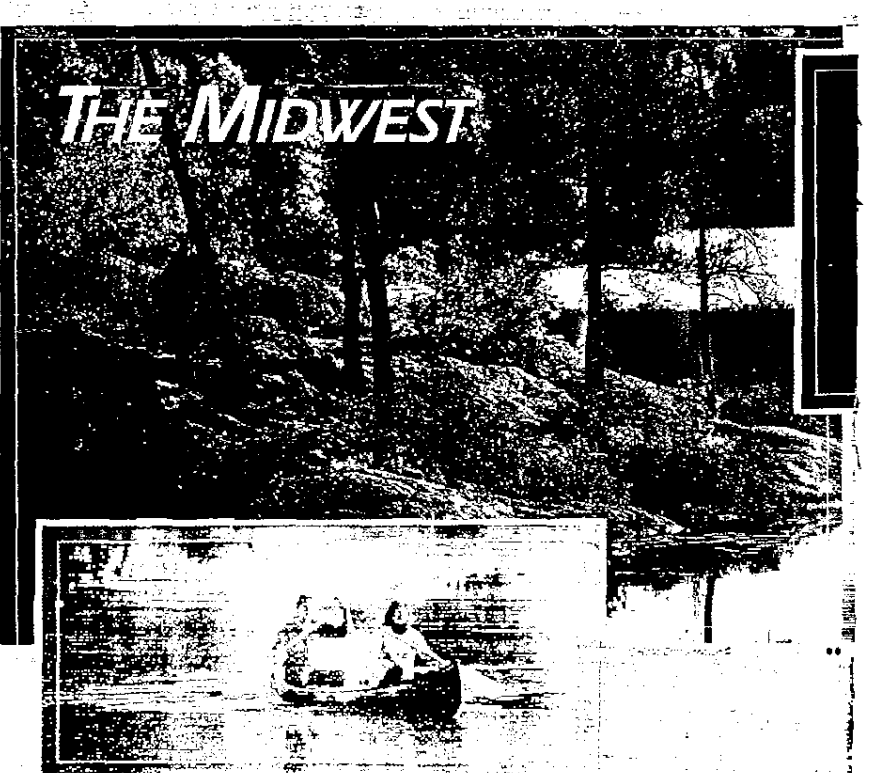
THE MIDWEST



Scarred and shaped by the glaciers of the Ice Age, the Midwest is a spreading landscape of water, prairie, and forest. Eons ago, the glaciers flattened this land, pocketing it with depressions, gouging it into hills and valleys. Lakes now fill those pockets and rivers course through the valleys.

This is, quite simply, water country. The three Great Lakes dominate the land. But a thousand other glinting streams and ponds add to the area's liquid character.

Around these Midwest waterways, the North Woods grow tall and dense, offering a hearty mix of sturdy conifers, white-barked birch, and bending alders. Beneath their boughs wander moose and deer, timber wolves still hunt and howl, black bear search for roots and berries. There are bald eagles overhead, and Canadian geese in stunning V-formations.

This is a land for wanderers, for explorers, for those eager to know what lies beyond the next bend in the river.

CANOEING THE BOUNDARY WATERS

Centuries before highways crisscrossed North America, the Indians traveled a network of lakes, streams, and rivers in birchbark canoes. They were followed in the 1700s and 1800s by French-Canadian voyageurs, those intrepid fur traders and explorers. In Minnesota's Boundary Waters Canoe Area, you can still travel [illegible]

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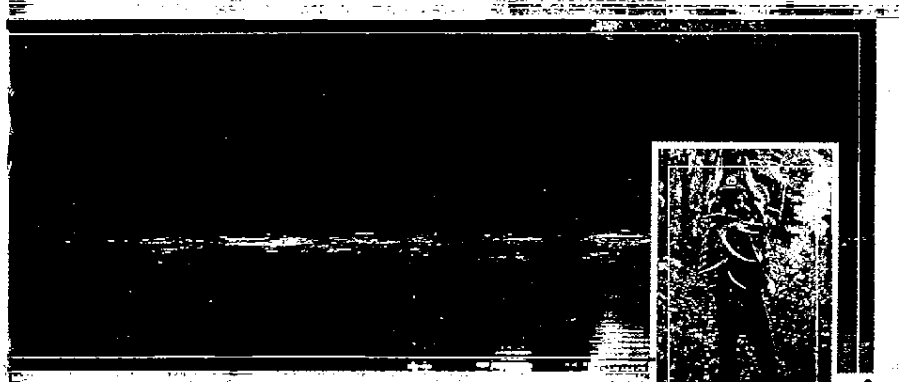
Source: https://www.industrydocuments.ucsf.edu/docs/zmwm0004



Beginning at Round Lake, 50 miles northeast of Grand Marais, Minnesota, you'll follow a looped route that will take you through some of the finest areas of this one-million acre water wilderness. You'll paddle along a shoreline canopied with spruce, fir, balsam, aspen, and birch. There'll be campsites to set up and fat Northern Pike to catch on French, Peter, Gabimichigami and Rattle Lakes. Early morning hours will find beaver, moose, and otter drinking at lakeside. And in the evening you'll paddle in the company of long-necked loons. On Little Saginaw Lake, huge eagles' nests weigh down the old pines.

This is a 10-day food voyage, and eventually the lakes of Owl, Tuscarora, and Missing Link will return you to your starting point.

Outfitter: Tuscarora Lodge and Outfitters, P.O. Box GTSP 110-CO, Grand Marais, MN 55604
On Your Own: *Maps and permits may be obtained from the Border Country Program, Box 204, Duluth MN 55801*

BACKPACKING ISLE ROYALE

A dash of land in the waters of Lake Superior, Isle Royale is a protected wilderness roamed by one of America's last packs of timber wolves and some 1,000 moose.

You'll explore the island's rocky shores, high interior r[illegible] ty swamps. There are frequent [illegible] h moose on island trails, but the wolves remain wary—although nights on the island do echo with their lonely howls.

A hike along Feldtmann Ridge will give you views of both lake and island. Isolated white pines shade this basaltic ridge area, while a thick forest of maple and yellow birch covers the land below.

Descending the ridge, you'll enter the dark tamarack and spruce woods of Big Siskiwit Swamp—the dank home of owls and muskrats. To complete your loop, follow short Island Trail to the interior Greenstone Ridge and trek its rugged path back to your trailhead.

On Your Own: *Isle Royale National Park, 87 N. Ripley St., Houghton, MI 49931*

Jerry Derbyshire ●●●

THROUGH THE STRAITS OF MACKINAC

Great sandstone cliffs and wave-blasted caves, white sand beaches and pine-covered fjords rim the shoreline of northern Lake Michigan.

2049438492

Rex Overton

From the protected waters of Little Traverse Bay, you and your crew will unfurl your ship's sails and set a northeast course to the Straits of Mackinac.

Beyond the Straits you'll cruise into Lake Huron's North Channel. Here you'll sail over clear, pristine waters (views down to 50 feet) and among a thousand broken islets. You'll cruise from isle to isle, setting your anchor at night [illegible] isolated freshwater coves. Small villages, deserted lumber towns, and dark island forests are yours to explore.

Outfitter: [illegible] *Marakesh* [illegible] *Shore Drive, Traverse City,* [illegible]

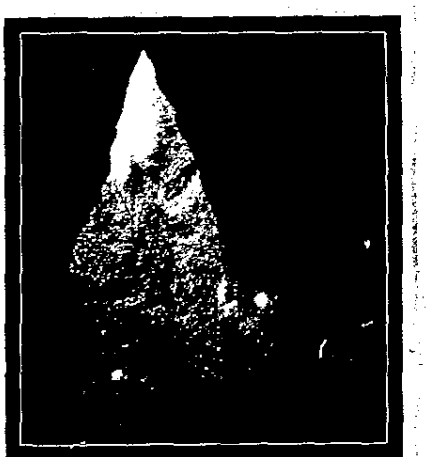
DIVING THE GREAT LAKES

The Great Lakes: America's vast [illegible] sea. Like any sea, they have their share of [illegible] ships and treasure from 19th century sailing days.

Near Michigan's Grand Traverse Bay on Lake Superior, you'll set sail to find these forgotten remains. Clear blue water now [illegible] over the hulks of great ships that foundered on rocky shoals. You'll spend three days diving among the wrecks of wooden schooners and sidewheelers like the *Superior*, which sank in 1856 with a cargo of $30,000 in gold.

In addition to known wrecks, there are many others waiting to be discovered. Perhaps you'll find your own antique bottle, [illegible] anchor, or stash of silver coins.

Outfitter: *Venture* [illegible] *Munising,* [illegible]



Jerry Derbyshire

CAVING IN MISSOURI

Over 4,000 caves [illegible] state of Missouri — and some 150 new ones are found each year. Filled with sparkling limestone formations, etched with Indian petroglyphs and early explorers' names, long the [illegible] of robbers and thieves, Missouri's caves are covered in legend and fantasy.

You'll crawl and wriggle through a hundred such dark grottoes along the state's Ozark Plateau. With fellow speleologists, you may explore Bode and Barton Caves, or chilly Pneumonia Cave with its deep underground lake.

Careful hiking on your own across the limestone [illegible] may even lead you to the adventure of squeezing into the dark depths of an undiscovered grotto.

Outfitter: *Many caves are privately owned and all are [illegible] The Speleological Survey, c/o* [illegible] *Rolla, MO* [illegible] *with experienced cavers.*

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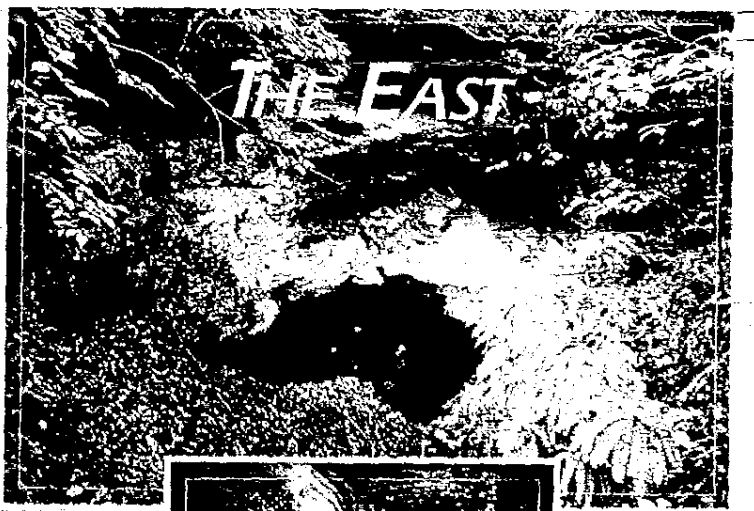
THE EAST

When the Pilgrims first touched shore on the New England coast, their immediate vista was one of impenetrable forest. Although that initial view has changed considerably, there are regions of the East that are still as wild and untamed as they were at the time of that first landing.

Beginning in Maine, seemingly endless acres of dense pinelands roll away from the rugged Atlantic seacoast. Yet as the early settlers soon discovered, these pinelands are anything but flat. Steeply pitched ranges like the Whites, the Greens, the Adirondacks, and the Appalachians thrust upward from New Hampshire to West Virginia. These are ancient, weathered ranges with stony bluffs and outcroppings. But around the bluffs and over the valleys and hills, the land is covered with a thick mantle of pine and hardwood.

The vastness of the West is not found here. Instead the land offers an intimate yet demanding view of one of America's oldest wilderness areas. Those who seek that view are rewarded in special ways.



Jerry Derbyshire

GOING UNDERGROUND

Caves are magical places, pristine wildernesses of darkness, silence, and glistening crystal. They are both enticing and foreboding. But that is exactly why you've come.

Crawling into a wild West Virginia cave on Backbone Mountain in the Alleghenies, you'll explore these hidden reaches of the earth. For an entire day, you'll live underground in a world of fantasy shapes and absolute night.

You'll worm your way through narrow, muddy passages that miraculously open into vast chambers. Your fellow spelunkers will join you beside underground streams that cascade over and around slick boulders and marble stelagmites. Overhead, the cave's roof glitters with a million shining crystals and long, dripping limestone draperies.

Time may disappear in the cavern. There are no watches here, and only silent albino creatures with blank eyes scurry by in the black depths. At the end of the day, you'll smile to see the sun again, but you'll never forget this nether wonder world.

Outfitter: TransMontane Outfitters, [illegible], WV 26260

Source: https://www.industrydocuments.ucsf.edu/docs/zmwm0004

ADIRONDACKS HIGH PEAKS

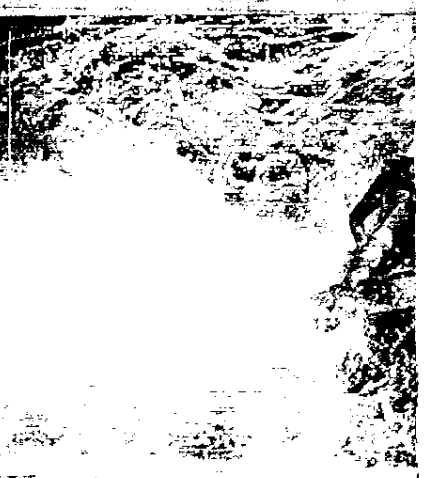
Here is rugged wilderness, five million forested acres of untouched land, more lakes than you can count. On a two-week cross-country venture, you'll peel back the heartland of the Adirondacks, exploring the remote regions that only the off-trail hiker will find.

You'll travel in the company of a small group, trekking deep into the mountains to establish a base camp beside a clear-running stream. From here, you'll set out daily to climb the summits of the surrounding peaks: Sawteeth, Santanoni, Seward, and Mt. Marcy.

Maps and compass will point your route through thick forest tangles of fir and pine to the mountain summits. Along the way, you'll discover hidden crooks and calm ponds, watch wary deer bound into the woods.

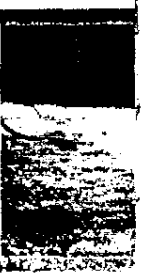
You may not reach some peaks until late afternoon, but the reward — the long, rolling vistas and golden light bouncing over the hills — will still be yours.

Outfitter: [illegible]
On Your Own: [illegible]



PADDLING THE UPPER YOUGHIOGHENY

Rushing whitewater is [illegible] You'll push off near [illegible] team on three mile [illegible] and rive [illegible] no, with [illegible] paddleboat [illegible] just enough time to [illegible] rapids and [illegible] ng through Charlie's Meat Cleaver.



And when you watch the raft just 20 feet ahead of you disappear in the bottom of a wave, you'll know why. There are no quiet stretches here. Only whitewater — at least 20 rapids in a short 15 miles.

Thick forests line the banks, but the river's boulders, foaming cataracts, and crashing waterfalls behind all of your attention all of your skill. When you finally take out in the quiet riffles at Friendsville, you'll be surging with the roughhiogheny's energy.

[illegible]

Source: https://www.industrydocuments.ucsf.edu/docs/zmwm0004

...but it promises to never just be a challenge. Every bend of the St. John ... you the snow-peaked Allagash Mountains, ... knee-deep in calm waters, ... bear lifting a wary head to watch you glide by.

... carried mouthfuls abundant in this river, and you'll likely ... plenty of fish for your evening meals. In the distance, ... there may be the cry of a coyote or the sudden hoot of an owl. ... is the sound of the river.

... just at the village of St. Francis near the Canadian border.

Outfitters: Eagle Lake, Allagash, ME 04774; Greenville, ME 04441. On Your Own: Allagash Canoe Trips, P.O. Box 713, Greenville, ME 04441; Penobscot Canoe Trips, Inc., P.O. Box 220, Greenville, ME 04441. Canoe rentals to Baxter State Park campers and information: write the Maine Forest Service, Greenville, ME 04441.

Canoeing The St. John

When the snow melts and the spring rains start in earnest in Maine, the St. John becomes a thundering river of ... Now, this is the time to explore a little-seen region. A week is all you need to travel 100 miles of its fast-moving flood ... and then a float plane delivers you and your equipment to Baker Lake. At high water, there will be plenty of rapids ... Boulders and eye-high haystacks will test your skill ...

Crack Climbing: The White Mtns.

Cannon Cliff, a 1000-foot reach of sheer rock wall, offers the best in New England climbing. Located near Franconia Notch in New Hampshire's White Mountains, Cannon Cliff is famous for its rugged profile, "The Old Man of the Mountains." You'll tackle its summit on a two-day ascent up Labyrinth Wall.

Bearing a pack filled with ... rocks, carabiners, food, and gear, you and your guide will work your way slowly, carefully up this rock face. Tree-lined gorges lie below you, and the fresh smell of pines ... over the breezes. But you are focused on the wall, on finding that important next crack, that small crystal handhold.

At night, you'll ... above the valley floor in ... a cozy hillside campground, eating ... but hearty meal. You'll talk over the day's success, discuss ... next day's challenge. When you return to the ... you'll savor your final step ...

Outfitters: ...

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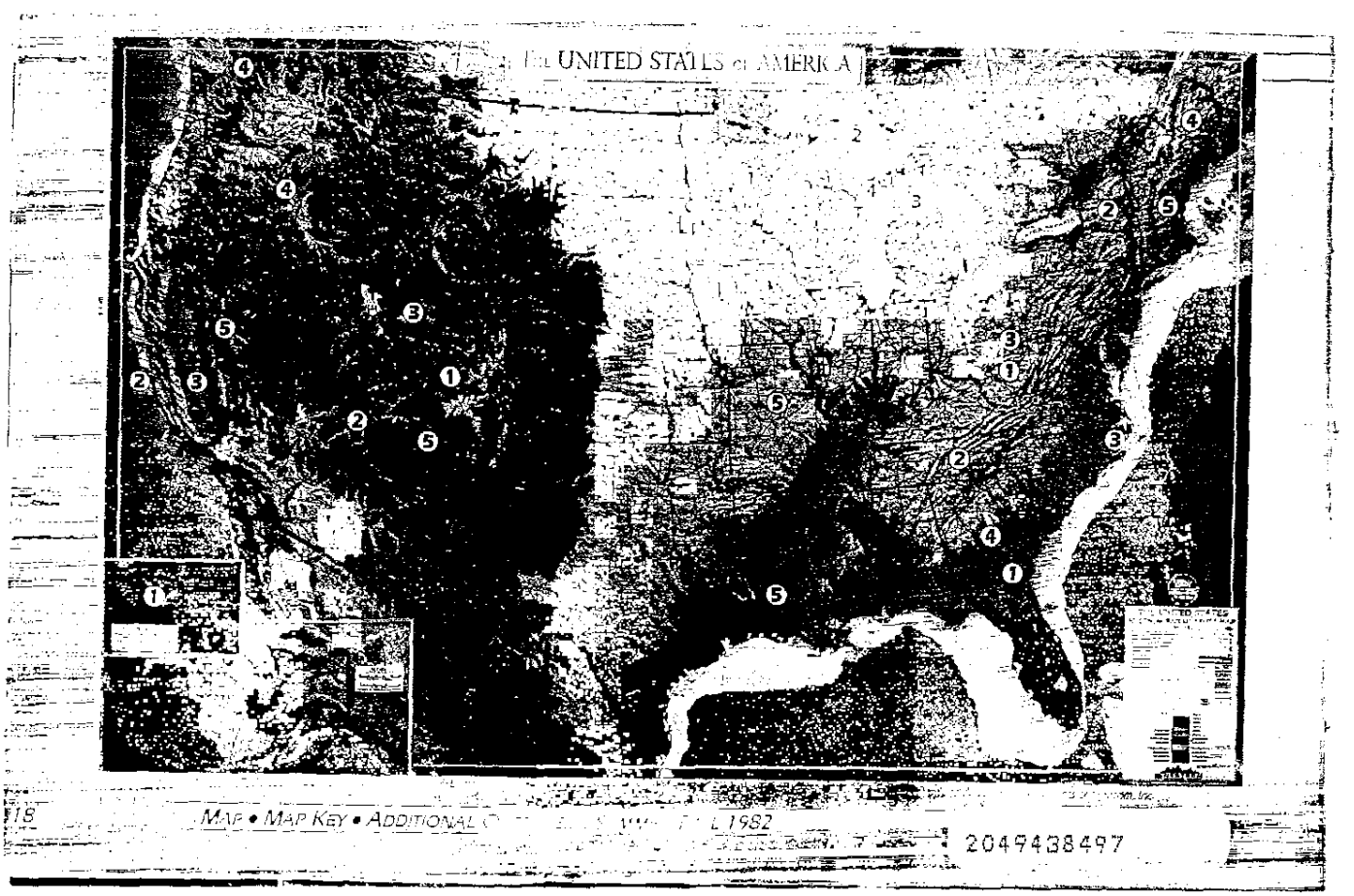
Source: https://www.industrydocuments.ucsf.edu/docs/zmwm0004



Source: https://www.industrydocuments.ucsf.edu/docs/zmwm0004

MAP KEY

A key to the geographic locations of Camel Expeditions listed in this guide.

PACIFIC

1. Dolphin Diving
   [illegible]
2. Expedition: Mt. McKinley
   [illegible]
3. Summit-to-Sea
   [illegible]
4. Kayaking the Sea
   [illegible]
5. El Cap: The Ultimate Climb
   [illegible]

ROCKIES

1. Uncompahgre: Desert Survival
   Wilderness Challenge, page [illegible]
2. Grand Canyon Rim-to-Rim
   Grand Canyon National Park Service, page 7.
3. Alpine Climbing in the Wind River Range
   National Outdoor Leadership School, page 8.
4. Rafting Idaho's Snake
   [illegible] River Touring
   [illegible]
5. Kayaking Cataract Canyon
   [illegible]

SOUTH

1. Backpacking: Cumberland Island
   [illegible]
2. Mountaineering: Great Smoky Mountains
   North Carolina [illegible] Bound, page 10.
3. Riding The Southern Thermals
   Kitty Hawk Kites, page 10.
4. Canoeing The Okefenokee Swamp
   Wilderness Southeast, page 11.
5. Excavating The Mysterious Mound Builders
   Earthwatch, page 11.

MIDWEST

1. Canoeing The Boundary Waters
   Tuscarora Lodge & Outfitter, page 12
2. Backpacking Isle Royale
   Isle Royale National Park Service, page 13.
3. Through The Straits Of Mackinac
   Marakesh Charters, page 13.
4. Diving The Great Lakes
   Venture North, page 14.
5. Caving in Missouri
   Missouri Geological Survey, page 14.

EAST

1. Going Underground
   [illegible]sMontane Outfitters, Ltd., page 15.
2. Adirondacks High Peaks
   [illegible]mont Voyageur Expeditions, page 16.
3. Paddling The Upper Youghiogheny
   Appalachian Wildwaters, Inc., page 16.
4. Canoeing The St. John
   Allagash Canoe Trips, page 17.
5. Crack Climbing: The White Mtns.
   International Mountain Climbing School, page 17.

ADDITIONAL OUTFITTERS

The outfitters listed below offer a variety of trips and services in their regions.

PACIFIC

Alaska Travel Adventures (General)
525 University Ave., Suite 610-G
Palo Alto, CA 94301

Sundance Expeditions (Kayaking and Rafting)
14894 Galice Rd.
Merlin, OR 97532

OARS (Whitewater and Sailing)
P.O. Box 7007
Angels Camp, CA 95222

ROCKIES

Wilderness Trails (Backpacking)
P.O. Box 9252
Moscow, ID 83843

Exum Mountain Guides (Mountaineering)
Box 570
Wilson, WY 83014

Rocky Mountain Outfitters (General)
P.O. Box 9586
Denver, CO 80209

SOUTH

Everglades Canoe Outfitters (Canoeing)
39801 Ingram Highway
Homestead, FL 33034

Wolfcreek Wilderness (General)
P.O. Box 596
Blairsville, GA 30512

Texas Canoe Trails (Canoeing and Rafting)
121 River Terrace
New Braunfels, TX 78130

MIDWEST

Whitewater Specialty (Canoeing and Kayaking)
[illegible]
[illegible] 54491

Iowa Mountaineers (Mountaineering)
[illegible]

MidAmerica River Voyageurs (Canoeing)
[illegible]

EAST

North Country Outfitters (Canoeing and Backpacking)
Box 81 B
Rockwood, ME 04478

Nolichucky Adventure Center (General)
Box 484
Erwin, TN 37650

Eastern River Expeditions, Inc. (Canoeing and Whitewater)
Box 1173, Dept. AT
Greenville, ME 04441

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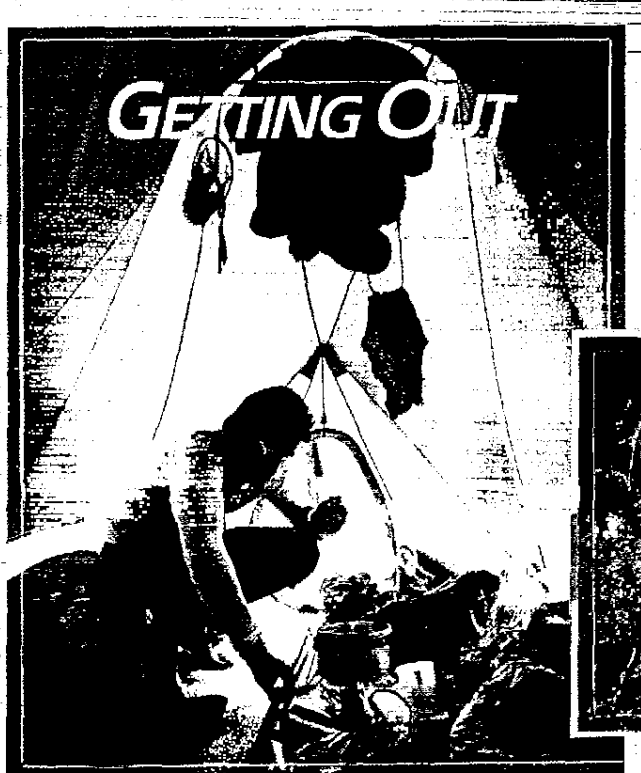
Source: https://www.industrydocuments.ucsf.edu/docs/zmwm0004

GETTING OUT



Galen Rowell

Whether you head off into Idaho's River of No Return Wilderness for a week-long backpacking trek, slip your canoe onto a blue Minnesota lake, or crawl into a dark Kentucky cave, you want to be ready for any challenge. Reading up on an area before your trip, reviewing maps, writing to outfitters who can give you special tips, talking with others who've gone into similar areas or tried similar adventures will all get you started in the right direction. Here are some other pointers:

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Source: https://www.industrydocuments.ucsf.edu/docs/zmwm0004

BACKPACKING/MOUNTAINEERING

B

B

- *Clothing and boots*
- *Sleeping gear*
- *Water and food*
- *Knife, flashlight, matches, cord*
- *Emergency, medical, repair gear*
- *Maps and compass*
- *Stove*
- *Personal items*
- *Containers—stuff sacks and a pack*

W

The amount of [illegible] depends on your destination. Down still seems the preferred [illegible] Fiberfill is better for camp regions [illegible] trekks.

As wilderness [illegible] have become more popular, [illegible] stoves have become almost mandatory; there is a good selection of lightweight models [illegible]

[illegible] a topographical map of the region you're going [illegible] for a fee from:

- *(U.S. east of the Mississippi)*
  U.S. Geological Survey
  1200 South Eads St.
  Arlington, VA 22202
- *(U.S. west of the Mississippi)*
  U.S. Geological Survey
  Federal Center,
  [illegible], CO 80225

Galen Rowell

Two useful books to read before setting out:

- ***Walking Softly in the Wilderness,*** John Ha[illegible] Sierra Club Books
- ***Mountaineering Medicine: A Wilderness Medical Guide,*** Fred T. Darvill, Jr., MD
  Available from: Skagit Mountain Rescue Unit, Box 636, Mount Vernon, WA 98273

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Source: https://www.industrydocuments.ucsf.edu/docs/zmwm0004

KAYAKING/CANOEING/RAFTING

Whitewater sports require basically the same checklist as backpacking — with the key exceptions of boat and lifejacket. You'll also want [illegible] — [illegible]-locking, [illegible] answer here.

[illegible] find boats designed [illegible] every type of waterway you'll [illegible] shotshot soloing down [illegible] is your sport, you'll find [illegible] canoes and kayaks with plenty [illegible] maneuverability.

Ocean kayaking is a new twist on an old theme: the Eskimos originally designed kayaks for the sea, not rivers. For traveling along the country's coastal regions, you'll want a flat-hulled boat that can be easily equipped with sails.

Some helpful sources of information:

- *American Whitewater Affiliation*
  P.O. Box 321, Concord, NH 03301
- *American Canoe Association*
  4260 East Evans Ave., Denver, CO 80222

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Larry Burke

PREPAREDNESS

Whatever adventure you elect to set out on, always think in terms of the old Boy Scout motto and be prepared. Challenging yourself also means surviving. Whether you're [illegible] or rafting, be sure you have the means of sur[illegible] hand.

To assure your preparedness for all situations, fill a small stuff sack with:

- *Whistle*
- *Mirror*
- *Signal Cloth*
- *Dimes (for emergency phone calls)*
- *Waterproof-windproof matches*
- *Candle stubs or other fire starters*
- *Emergency shelter (a simple tough plastic bag)*
- *First-aid manual*
- *Knife and flashlight*

Stash your survival kit in a handy corner of your pack or waterproof river bag and [illegible] you on day hikes or off-river [illegible]

Participation in any outdoor expedition requires proper preparation and physical stamina. The information contained herein represents an introduction to your adventure, rather than a complete resource.

Larry

Other Camel Expeditions are available through Thomas Cook Travel Agents.

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Source: https://www.industrydocuments.ucsf.edu/docs/zmwm0004

Source: https://www.industrydocuments.ucsf.edu/docs/zmwm0004

FLY-FISHING WITHOUT FEAR

Just because it's pretty doesn't mean it's impossible

—By John Rasmus

R. Valentine Atkinson

Some sports are, to put it simply, more artful, more determinedly complex than others. And around these sports there gathers a mystique.

Mountaineering, with all its troublesome, heroic possibilities, has the aura. Backpacking, which seeks to minimize the unexpected through sensible planning, mostly lacks it. Fishing to catch fish by whatever means—including sonar-equipped $7,000 bass boats, Russian trawlers, and can't-miss wobbler-spoons—is devoid of mystique.

But fly-fishing brims with it: the Newtonian grandeur of the cast. The ritual tying of flies made from deer fur and pheasant plumage. The chivalrous release of the vanquished but still-noble trout. No part of the sport is ugly, clumsy, easy, or less than honorable. It is a sport of complete aesthetic integrity, but many people, I think, are unnecessarily spooked by it.

David Stoecklein

Most often, fly-fishing in practice goes unartfully, something like this: It is 10 A.M., Memorial Day in the North Woods of Michigan, a warm, cloud-scudding morning, the river still high and fresh from a

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Source: https://www.industrydocuments.ucsf.edu/docs/zmwm0004

week's spring rains. It is almost too high for wading this portion of the Pierre Marquette, which cuts through a basin of tall elms, maples, and scrub willows.

We are waiting for the first low metallic booms from upriver, the sound of paddles drumming against the sides of aluminum rental canoes. Soon they will come careening downstream from Baldwin carrying auto workers and their girlfriends, out of control. They will hit rocks, not quite clear low branches, and laugh loudly. It is all part of late twentieth-century Michigan ecology, but it will frighten the trout until midafternoon. The plan is for Jimmy Eberhard and me to produce some last-minute dry-fly action before the Grumman hatch.

Jim is 12, a fine angler, with long, graceful casts and hook-setting reflexes honed with preadolescent dedication on the piers of Lake Michigan near his home in Winnetka. But Jim weighs only about 75 pounds, not enough bulk for the chest-deep runoff from the forest around us. We are down to one beginner.

So we walk along, catching the sun, our waders squishing through a wet pasture of old cedar stumps. We do not expect much to come of all this, especially considering the discipline problems of the black Labrador, Raven, who is bounding up ahead of us.

Raven is an obedient suburban house dog who, nonetheless, cannot resist the taste of warm feathers in his mouth. Every once in a while, he will flush some ducklings from the banks and go charging into the river after them, only to be washed downstream as the ducklings skitter across the river and home to mama. To the trout below, the sight of the chunky Lab's legs churning against the current must resemble the largest dry-fly pattern—perhaps a Royal Coachman?—that they are likely ever to see. But not even the biggest will dare rise for him; and the more timid ones, we suspect, may have their morning feeding dispositions interrupted. But Raven, guilty-looking as he is, cannot help himself, and so we keep moving downstream.

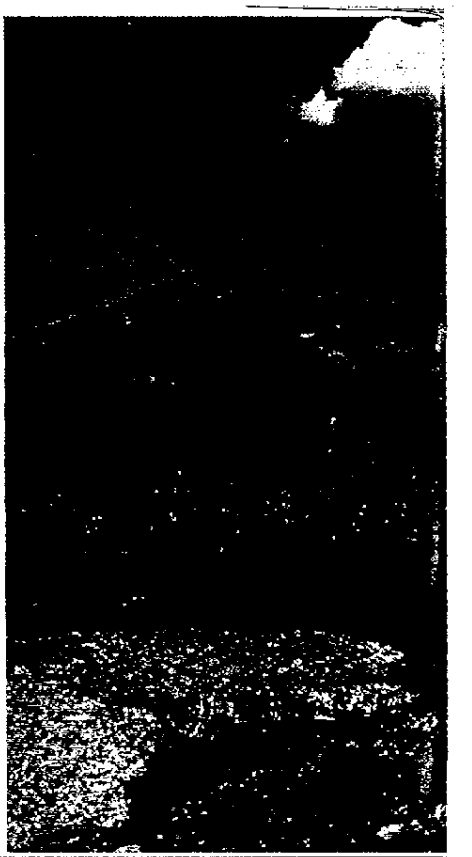
At the next turn the river is wider, with low willows along the banks. The wind has died, and you can feel the humidity rise. Suddenly a hatch is on: Mayflies are emerging from the bottom of the stream, fluttering their wings for a second to dry, then taking off into the trees to look for mates. Just as quickly, the trout are rising for them. This is known as a window of opportunity.

I slump down into the water, cold sips coming in over the tops of the waders, and I inch out toward midstream and a provocative rise about 30 feet away. I tie on a small gray fly, lift the rod, and backcast the fly into a tangle of willows behind me. I tiptoe over and yank it out. The fish are still rising as I work back into casting position. I try to avoid the bushes this time, and the cast is anemic, far short. The next lands tangled up and wide to the right. The third is closer. The fly settles, drifts three inches—a strike. I lift the rod and set the hook. A minute later, I have a 12-inch brown. A few more casts and I'm into a rainbow. He dances across the water and spits the hook.

You must present to the trout a convincing imitation of the insect he happens to be feeding on at the moment.

Now clouds of mayflies are hatching, swirling up into the trees over the water. The moving surface of the river is covered with their larval shells, as if with sawdust. Trout are splashing all over, perhaps eight within sight, but I'm not getting strikes any more. The odds have now gone the other way: too much food, too many flies to choose from. Mine is just one of hundreds.

Things are humming here, swirling and hatching and feeding. I stand and watch it all for a minute, forgetting to cast. Upstream, there is the low boom, and holiday laughter.



Peter Miller

Removed from the plane of the ideal, fly-fishing is often less than serene. But it is always pleasurable, and really isn't very hard, nor expensive. And somehow the aesthetic veneer of fly-fishing makes it extremely well suited to the beginner. Solitary and reflective, most of your fellow anglers won't even be aware of you; or they will go to great lengths to avoid you. You'll have time and space to practice the basics without bothering anyone or humiliating yourself. And since the goal is not simply to catch fish, but to do so within the rules of the game, there is no particular dishonor to being skunked. Even for the expert, the payoffs are somewhat infrequent. Like all artists, the serious fly fisherman focuses on the doing of it, the appreciation of it, rather than becoming caught up in peripheries of snobbism and fraternization. And that is fortuitous, since you won't be able to offer much on either front for a while.

Whatever happens on the river will take place away from view, cradled in the benign indifference of Nature. To the public and friends, all the early episodes will be a mystery, lost forever. In the end, what will emerge from the river will be only The Artist as Angler. Just don't take your ear off with that first cast.

A few basics: The standard rod, reel, and floating line (right). The cautious working of riffles (top). The gentle removal of the hook (above).

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Source: https://www.industrydocuments.ucsf.edu/docs/zmwm0004

R. Valentine Atkinson

EQUIPMENT

My first outfit, purchased complete a year and a half ago, cost $179.50. That collection consisted of the rod, a stiff-action Eagle Claw graphite suitable for western rivers, an inexpensive Ryobi reel, a double-tapered floating line, various sizes and strengths of transparent leaders, an inexpensive fly-tackle vest, all the things you stow in it—a plastic box with a dozen fliers, clippers, line straightener, and fly floatant—and a pair of felt-soled chest waders. A few final dollars for a Wyoming trout license, and a pair of polarized sunglasses, and I was ready to wade in.

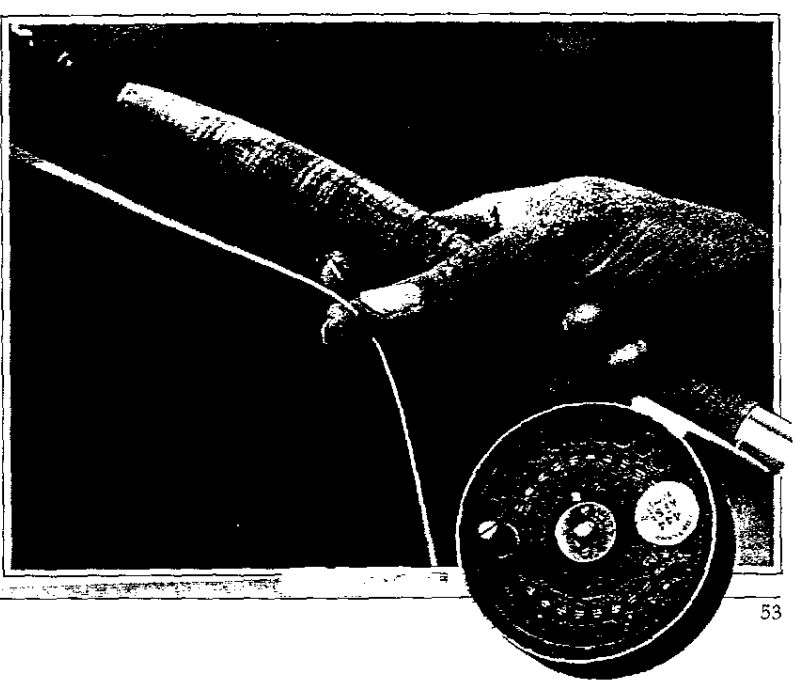
This starter set has gotten me through approximately 30 fishing days, including two long weekends of largely unsuccessful tussling with 15- to 20-pound king salmon on their autumn spawning runs in Michigan. My rod is now missing a guide, lost in one of the more lively salmon encounters, but otherwise it is in fine shape. Other than the missing guide—and all those flies lost long ago—we're still riding on original parts.

Choosing gear is relatively simple, despite the vertigo you can get from fly-fishing catalogs. First, you *do* need all of the above-mentioned items; but there is no need to go first-class with any of it.

Fly-casting reels are mechanically simpler than spinning reels, and one that will do its job—that is, hold the line on the spool and provide a bit of drag when a fish takes the line—should cost no more than $40. Floating lines cost about $20 from the best sources, such as Orvis or Scientific Anglers. (Just be certain that your line, either weight-forward or double-tapered, is the right weight for your rod; otherwise, your casting will never click.) Fly-tackle vests are a necessity, but keep your first vest simple and inexpensive—washable, breathable cotton, about $20, rather than the stiffer polyesters. Chest waders are the one piece of gear in which scrimping doesn't pay: cheap waders leak—a complete defeat of purpose. Expect to pay about $45 or more for a pair that will last.

Choosing a rod opens vast areas of possibilities. Start simplifying by eliminating from consideration the classic split-cane bamboo fly rods, which start at about $300. While bamboo is still the ultimate rod material for the advanced angler, particularly the purist, split cane tends to be too "soft" for the awkward casting of the beginner. For your first rod, stay with fiberglass or graphite. The latter is an extremely strong material, and it casts farther and with more line speed than fiberglass. But graphite itself is so expensive that at the lower end of the price range, about $100, you may find that a well-constructed fiberglass rod suits you better than a poorly made graphite rod in which corner-cutting has taken place.

But the primary consideration will be the kind of fishing you will do. And that will depend on your geography—the kinds of rivers and streams generally found in your part of the country. If you are going to be fishing for steelhead in the Pacific Northwest, you might need a nine-foot-long fast-action graphite rod



Peter Miller

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Source: https://www.industrydocuments.ucsf.edu/docs/zmwm0004

to propel big flies for long distances. If you fish closer in—preferring to daub delicate mosquito imitations to big trout on Pennsylvania spring creeks—a much shorter rod, about seven feet long, can be an effective tool. Most of us will need something in between—seven- to nine-foot rods with six- or seven-weight line for fishing the small and medium-sized rivers of the East and upper Midwest, or eight- to ten-foot rods, with heavier eight- or nine-weight line for the big, windy rivers of the Rockies. Each rod will have different flex characteristics designed for your kind of fishing, a factor more important than the material used.

How much should you spend? It depends on whom you ask. I think something is to be said for starting out on the inexpensive end. After all, there is probably only one time when you can really enjoy fishing on inferior equipment, and that's when you're too inexperienced to know better. Then, for each level of skill you reach, there will be a new realm of quality products to match.

Peter Miller

In the end, what will emerge from the river will be only The Artist as Angler. Just don't take your ear off with that first cast.

Ted & Donna Williams

My mentor in these matters is a practical, frugal Montana writer, Stephen Byers. But he sees no point in starting modestly, learning the ropes, and someday winding up with "a closetful of junk." For him, the path of least resistance is to decide immediately that you're addicted and step right up to a $250 graphite rod. Ultimately, he contends, you'll learn to cast better sooner, and all your money will be invested in the one rod you use.

A third approach, and a good test of friendship, is to learn the basics of casting on someone else's very good rod and then buy a cheaper one as your first. The reasoning is that clumsy equipment will retard your progress, but that you won't be ready for a great rod for the first couple of seasons. All you need is a trusting friend.

Whatever path you take, you'll be in a better position to decide on a rod after you've learned to cast. Once you have, go to a fly shop and discuss your geographic and financial situation with the salesperson. Pick out a few potential rods. Then the two of you should try them out in the parking lot, casting with an old line but no fly (some obvious advantages here over skiing, golf, and deer hunting). A rod that is well suited to you will actually iron out some of your casting idiosyncrasies, compensating for such tendencies as pausing too long on the backcast or whipping too hard on the downstroke. Expert diagnosis and advice on your casting is called for here. *You* can't provide that, so the salesman should.

The first time, then, you should consider buying from a specialty fly shop, the best choice being one that holds casting lessons. For the same reason, avoid the sporting-goods store staffed by teen-agers trying to bluff their way along, and be cautious about ordering your first rod by mail. If there isn't a shop in your area, consider waiting to buy until you get to one of the fly-fishing meccas, such as West Yellowstone. In these places there are enough shops for them to be competitive in price, but all of them can outfit you intelligently.

The main characters: A brook trout holds in the shallows of an eastern stream (above). An angler works the channels of the Madison River in Montana (top). A cloud of western caddis flies emerge in an evening hatch (right), and a mayfly examines its dry-fly imitation, the Green Drake (inset).

THE CAST

The fly cast is one of those skills that one knows instinctively will be as hard to learn as it looks: The practiced fly caster loops vast lengths of line fore and aft, then drops the fly like a snowflake on the nose of the innocent trout.

You just know you don't have the reflexes for it.

Well, a little self-confidence here. Jim Eberhard's dad, Gary, a commercial real-estate brokerage president, taught himself to *sail* by reading a book on the subject. And when it came time for him to learn to fly cast, he did the same thing. Nothing to it. I learned the basics in a front yard, with a house cat chasing the end of the line.

What is important, mostly, is a sense of rhythm—not even a sense of it, just an awareness. The cast takes place between the counts of one and four, in a forward arc between ten o'clock and about one o'clock. First, let out about 15 feet of floating line and tuck your casting elbow lightly to your side. With your arm forward (at ten o'clock) and the line straight, lift the rod up and the line off the water on the count of one. On two, bring your rod back to one o'clock, tossing the line up in the air and back behind you. Pause on the count of three, allowing the line to straighten behind

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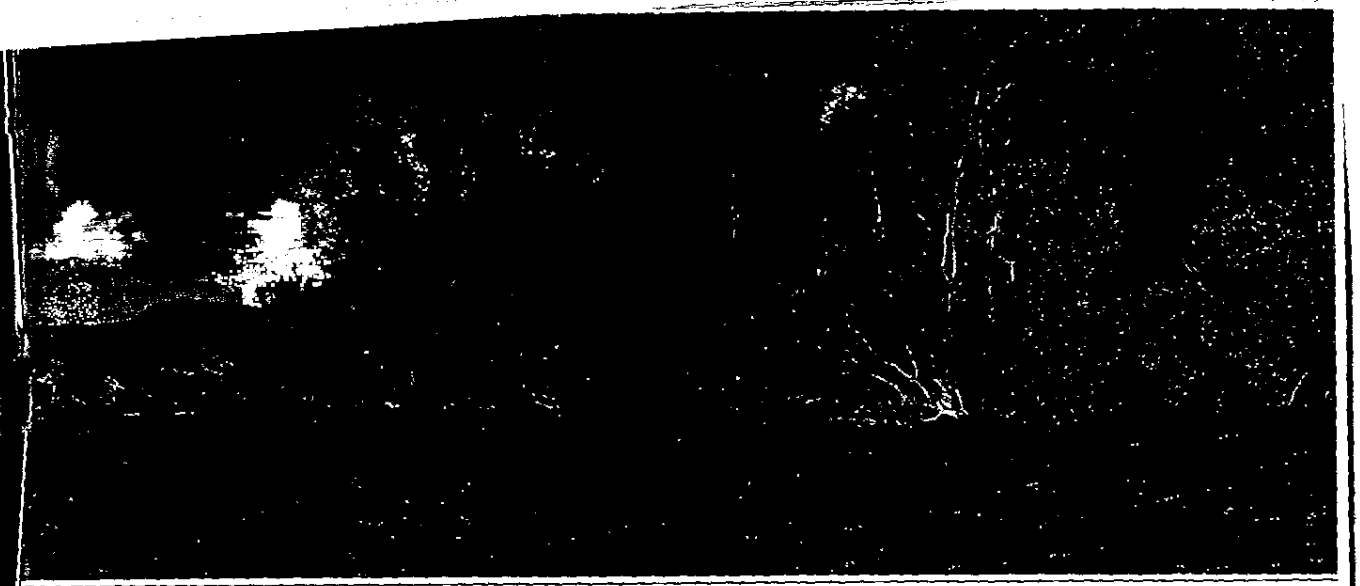
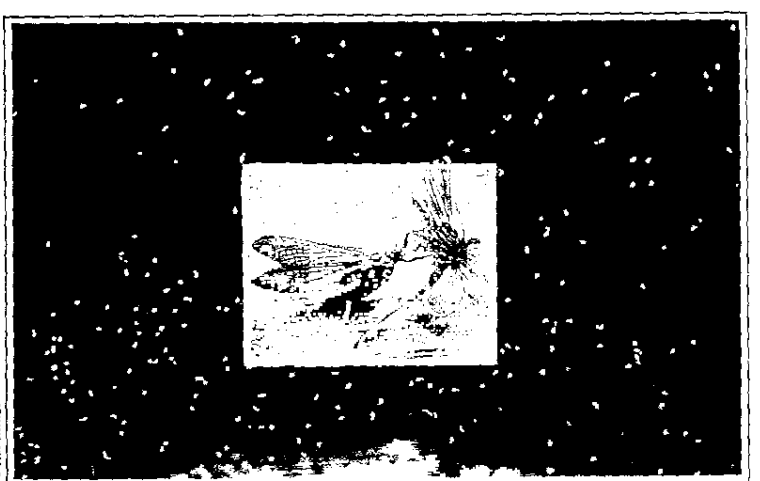


you, then bring the rod forward and flip your wrist, bringing the fly and the line back to the front. Restrain your impulse to whip the rod forward before the line has had a chance to go all the way back, but don't let it hit the water. On the forecast, don't whip the rod, but don't be too delicate, either. Distance is added to the cast by holding some slack line in your left hand and letting it shoot out during the forward casting motion. Once you know the basic parts of the cast, work them into a single smooth casting sequence, with no obvious stops or starts. If all goes correctly, the line will straighten out on the forward cast, and the fly will drop delicately to the water, followed by the transparent leader and the floating line. The first few times you try it, don't count on that happening. If you get off on the right foot, though, you may be ready to make effective casts to fish within an hour or two.

FLIES

Stream entomology, the business of flies: Suddenly, a realm of knowledge you never knew existed is stunningly important. You must learn something of the natural diet of the trout, primarily a kaleidoscopic assortment of aquatic insects, and present to him a convincing imitation of the one variety he happens to be feeding upon at the moment.

There are two ways to go about it. The angler who feels uncomfortable without a set of instructions follows a man named Ernest Schweibert, author of the definitive manual of angling entomology, *Matching the Hatch*. The book presents not only all the major and lesser insect trout foods, but also color sketches and the Latin names of each.



Peter Miller R. Valentine Atkinson

The major insects, Schweibert says, are the stoneflies, found mostly in the large rivers of the West, and two more common groups, caddis flies and mayflies. Mayflies are the most important, forming the basis for the well-known dry-fly imitations—the Adamses, Duns, Hendricksons, and Coachmen. The insects themselves vary in size from a quarter-inch to about an inch and a half, and come in all combinations of colors—blueish, gray, brown, cream, yellow. Each variety has its own habits, and each is "hatched" from the stream bed and rises to the surface of the water at different times of the year, under different conditions. Schweibert knows them all.

The first temptation is to dismiss this stuff—too much botheration. But once you have witnessed a few hatches and have some experience to draw upon, the specifics can be fascinating. About half the descriptions are accompanied by fish stories. Somehow, the prospect of taking a selectively feeding 20-inch brown at a particular bend in the river in a given week helps work up an interest in *Ephemerella needhami* (Family Baetidae), which you can imitate with a dark Ephemerella Nymph, size 16.

But even if you skip the biology entirely, you stand a good chance of being carried by your wits. An assortment of flies, mayfly and caddis imitations, plus anything your man at the fly shop tells you will imitate the main hatches expected soon, should suffice. Then, when you get to the river, check the sides of the banks to see whether a hatch is on and trout are rising. If they are, scoop up a few flies with your hands. Don't try to identify them when they are in

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JOHN GODDARD HAS KAYAKED THE NILE (NO. 1), CLIMBED THE MATTERHORN (NO. 30), AND RETRACED THE TRAVELS OF MARCO POLO (NO. 70). HE STILL HAS TO VISIT THE MOON (NO. 125), SO HE'S IN QUITE A HURRY

Jack Yowell

The Life OF THE List

By Virginia Morell

In 1940 it must have seemed to most people that all the world had finally been explored. Africa had been tramped across for two centuries by a series of adventurers; Amundsen had been to the South Pole, Byrd to the North; Thesiger had even wandered Arabia's forbidding Empty Quarter.

But John Goddard thought there was plenty left for an explorer to do. He was just 15, but he had read every explorer's journal he could lay his hands on, and he knew that no one had yet explored the length of the Nile. Or the Congo River, for that matter. No one had yet made it to the summit of Mount Everest. And no one had been to the moon. Around him lay the suburban confines of Los Angeles, but beyond the city was a world full of promise and possibility. He says he didn't want to miss anything. So he sat down one rainy afternoon and made a list of 127 goals he wanted to achieve in his lifetime.

"Explore the Nile, Amazon, and Congo rivers," he began. "Climb Mount Everest, Mount Kilimanjaro, the Matterhorn. Ride an elephant, camel, ostrich, and bronco. Retrace the travels of Marco Polo and Alexander the Great. Appear in a Tarzan movie. Land on and take off from an aircraft carrier. Light a match with a .22 rifle. Read the works of Shakespeare, Plato, Aristotle, and Thoreau. Visit every country in the world. Run a mile in five minutes. Write a book. Marry and have children. Visit the moon."

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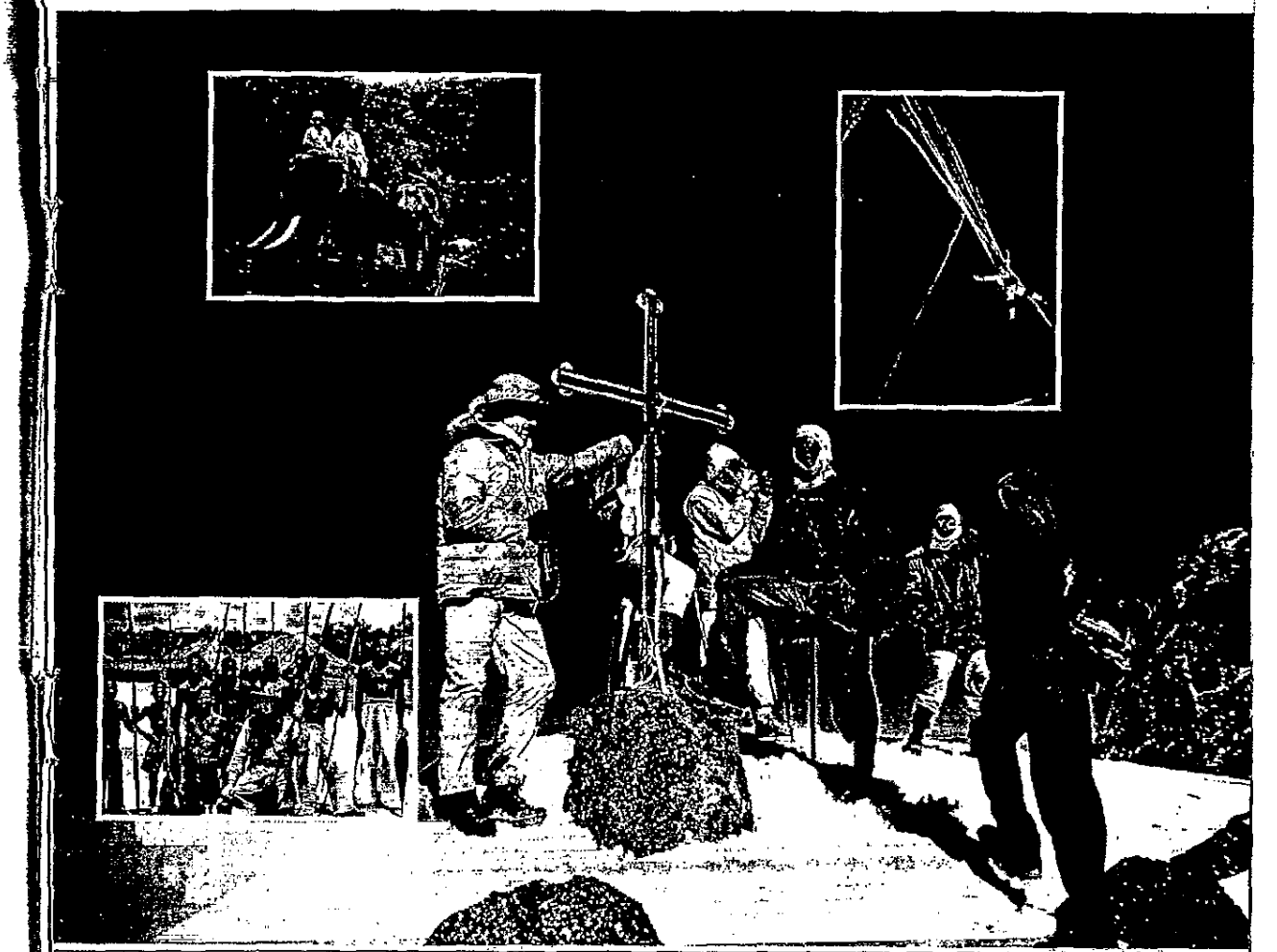

It's a daring list: school-boy, Mission-Impossible fantasy mixed up with a vision of himself as a gentleman-explorer. There is also, in its obsession with accomplishment, a stubborn resolve to the list. Goddard may have been surrounded by suburbia, but his own life would be lived on a far grander plane. The list was not only a dare, but a way out.

"I wrote the list," Goddard says today, "because at 15 I was very aware of my limitations. I was just an unformed human who had potential, like everyone else, and I really wanted to do something with my life. You know, as a teen-ager I looked around and saw so many people who had never stretched themselves in any way, they had never taken a risk. They were wrapped up in responsibility, paying bills, trying to survive. To me, they had made a travesty of their lives. So I decided to set up some sort of blueprint of goals for myself so that I would always have something to work for."

In Goddard's young eyes, the people who had succeeded in life were the explorers he read about, men like Livingstone, Stanley, Burton, and Speke; and he decided to model himself after them. "They were gutsy men of determination and scientific outlook," he explains, "and their books really fired my imagination. I wanted to travel to remote areas, to name rivers and lakes, to visit people who had never met men from civilization."

With list in hand, he set off on an almost compulsive quest to become the explorer of his dreams. By age 16 he had explored the Okefenokee Swamp and the Everglades and made a film of his travels there. By 20 he had dived in the Caribbean, Aegean, and Red Seas. He had also become an Air Force pilot and flown 33 combat missions over Italy. By age 21 he had traveled in 21 countries, and shortly before turning 22 he had

They don't make adventurers like this any more: Goddard exploring the Congo River (overleaf); a pause on top of Mount Kenya (above). Still more travels (insets, left to right): a company of natives on the Congo expedition; a tiger safari in Thailand; skydiving in California.

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John Goddard's Top Adventures

The greatest trip, says Goddard, was number 1 on the list—his expedition down the Nile. Here are his next four most memorable adventures:

Number 3: The Congo in Kayaks—"I made that trip with a close friend, Jack Yowell from Nairobi," says Goddard. "We were going through virtually unknown territory. In this day and age, when so much of the world has been gone over with a fine-toothed comb, there we were really exploring." But 400 miles downstream, tragedy struck: Yowell drowned in a whirlpool. "I was plunged into absolute despair, great depression," says Goddard. "It was the lowest point in my life."

Number 4: The Complete Colorado—"We spent four months traveling 1,450 miles down that river, and everything imaginable happened. I crashed a plane near the river's source, flipped several times in the huge rapids, and was bitten by a 5½-foot diamond-back rattler. I nearly died from that."

Number 26: Dogs of Mount Ararat—On this expedition, Goddard was in search of Noah's Ark. "I went with Fadli Turan, a Turkish friend from Ankara. Just climbing a mountain of that historical significance was a great thing. But just after we reached the summit, we were hit by a blizzard and nearly lost our way. We had to make a night descent, and when we reached the first Kurdish village, we were attacked by their huge guard dogs. Each of those dogs weighs at least 150 pounds, and they are trained to kill wolves and bandits. If their owners hadn't called them off, we would have been torn to pieces."

Every Flying Experience—"I've been fortunate in having 'stick-time' on 46 different planes, including 16 jet fighters and bombers. And flying a jet at twice the speed of sound is such a contrast to the other things I've done. It's been like living in two worlds—this modern, ultrasonic one where I've flown in outer space and seen the curvature of the earth, and the remote, unexplored world where I've traveled by foot."

—V.M.

> "Traveling the Nile seemed the absolute *crème de la crème* of exploration."

discovered a 100-foot Mayan temple deep in the jungles of Guatemala. That same year, he was voted a member of the Los Angeles Adventurers Club, making him the youngest person ever admitted. And he began planning what would be his most ambitious quest, goal number one, the exploration of the Nile River.

"I put exploring the Nile at the top of my list," Goddard says, "because it seemed to me that this was the most important topographical feature on earth. The Nile is a microcosm of all of Africa: It has every bird, animal, reptile, and insect species of Africa in its basin; it has the smallest and tallest of all humans (Pygmies and Watusis); it has highly educated, sophisticated individuals in Khartoum and Cairo, and primitive ones like the Dinka. So traveling the Nile to its end seemed to me the absolute *crème de la crème* of exploration. It was the supreme challenge to trace the whole length of the river, to film it, to study the people who lived along its banks, to collect specimens."

Goddard was just 26 when he arrived at the source of the Nile in the mountains of Burundi with his two expedition partners, André Davy and Jean La Porte. Goddard had joined the two Frenchmen when La Porte wrote a letter to the Adventurers Club seeking another partner. In spite of their shared interest in the river, it seemed an unlikely team: Goddard spoke rudimentary French, Davy spoke "school-boy English," and La Porte spoke only French. La Porte was also the only one with any white-water kayaking experience. Yet, Goddard recalls, the three embarked on their 4,000-mile voyage with absolute confidence that they would make it. In Goddard's book about the trip *(Kayaks Down the Nile)* there is a photo of the three "Nileteers," and they look exactly as you might imagine Goddard must have looked before going off on any of his combat missions: radiant, charming, certain of their goal. Goddard had even devised his own personal motto for the expedition: "It should be done. It can be done. It shall be done."

But at the beginning, very few people shared their confidence. "Most of my friends said, 'John, you're going to kill yourself before you're 30,' " Goddard recalls. "And all the government officials repeatedly told us that no one had ever been able to go the whole length of the river, and that it would be absolutely impossible for three men in little 60-pound kayaks to succeed. All of their nay-saying only made us more determined, although of course we certainly did have our problems and hardships."

The "problems and hardships" began on day one of the expedition, on the Nile's main source, the swollen and tempestuous Kagera River. As his companions paddled off down the river, Goddard stood on shore filming their departure. Then he jumped in his boat and, to catch up, began paddling hard—right into the path of a huge bull hippo. "Fear set my arms flailing like a windmill in a gale," he wrote in his diary, "and the double blades of my single paddle churned the water to a froth."

He escaped the hippo, but only 12 miles farther on nearly drowned when submerged roots snagged the prow of his kayak, flipping him over in a foaming rapid. "I was dragged along upside down, my legs caught in the lashings which secured my duffle bags," he recounts. "I knew I was drowning—it was one of my closest encounters with death." With tremendous effort, he managed to save himself, but he had taken a savage beating, as had his boat and equipment. So had his companions. It was another month before they put a paddle into the Nile again.

From this point on, Goddard's diary takes on an almost hysterical determination. Every delay from malaria attacks, sandstorms, hippos, rapids, the swampy Sudd, and what he remembers as his companions' "Gallic lackadaisicalness" is magnified by his fear of failure. "In my mind I just kept hearing all the voices of authority that said I couldn't do it," Goddard explains. "I didn't want to finish the trip so I could rub their noses in my achievement. But I wanted to complete the goal. There is such a wonderful feeling in that."

And ten months after first setting out, the three men did paddle from the mouth of the Nile into the blue of the Mediterranean.

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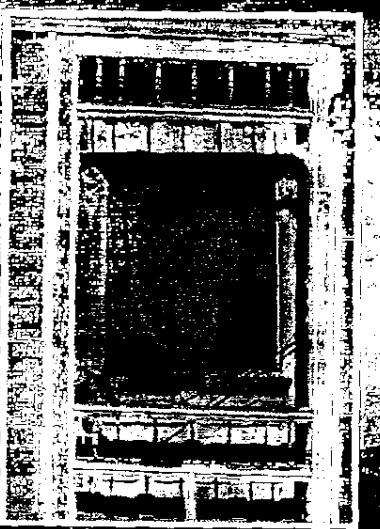
THE AUNTED ALINS

...neys to the heartland of ...uses, broken dreams, and potent magic

by Ken Neuntheis

I ... lived in a ... north of Boulder, on the very edge of the ... with ... hills of the Rockies ... The Plains ... called ... been ... in the twenties by a mad old man, one more rancher with his wits blown ... skull by the wind ... as a weird house, built out of scrap lumber and ill-fitted remnants of other, long-gone houses,



... and barns: a drab patchwork house, with the same weather-bleached ... you see in old houses by ... sea. Living in the Plains ... in, in fact, was a lo... ...ing on a desolate ... some such place. ... Newfoundland, Iceland ... rides. From my front door, the plains stretched away like the sea; at night, the tiny lights of cars bobbed like dories out in ... ...ls of the dry rolling

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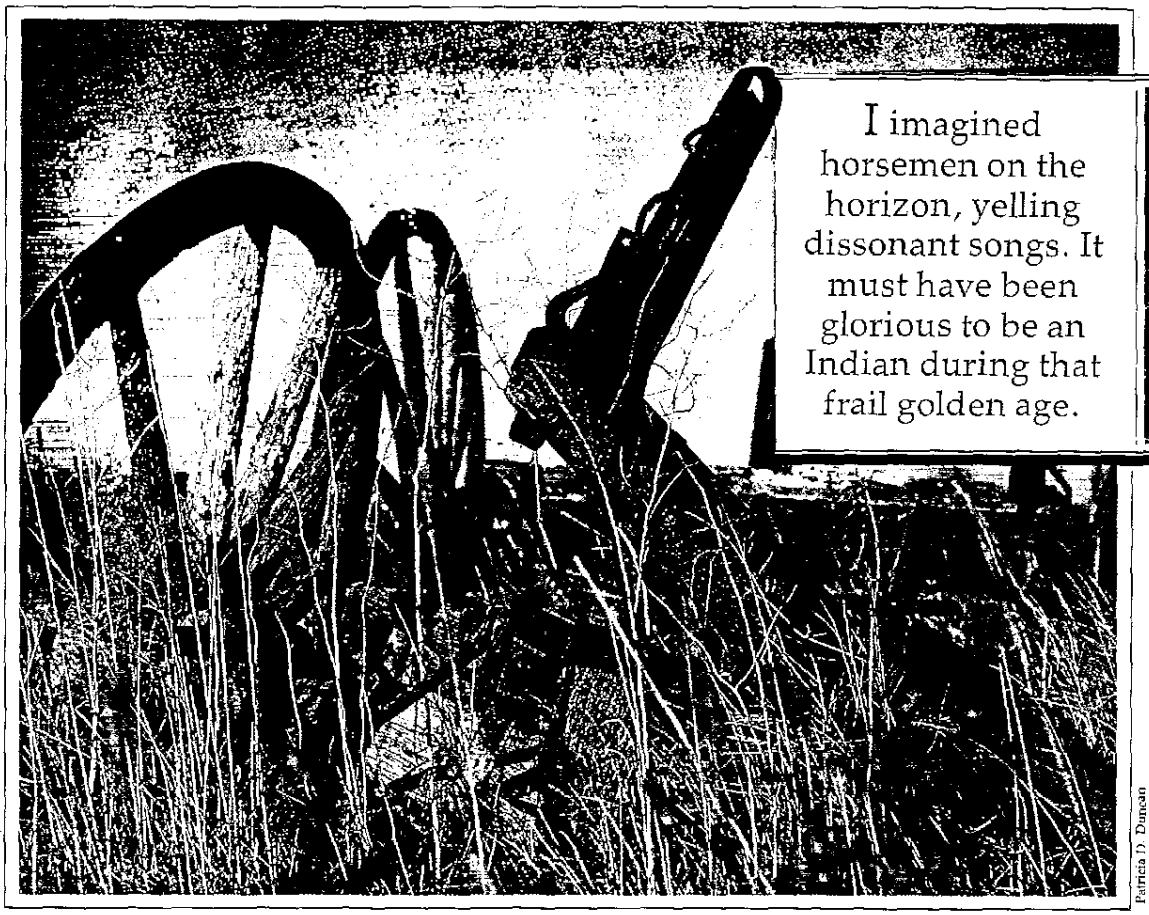
hills; every morning I found coyote tracks around the sides of the house, like the arcane signs and things you find at dawn on a beach, left by the tide.

The Plains Cabin was as close as I would ever want to get to actually living on the plains: It is just too lonely a place. If the Great Plains had an anthem, it would be played on a broken tom-tom by an Indian dying of smallpox, accompanied by an Okie on a harmonica full of dust. Its banner would be an American flag with buffalo skulls for stars. When I think of the plains, I think of exile, abandonment, extinction.

I recall one winter dusk up in the Dakotas, in a small cow town. My car had broken down, and I had sold it, and I was waiting for the bus to take me to Cheyenne and on down to Denver. The bus station, which was also the hotel lobby and the only café and saloon in town, was full of cowboys and Indians headed for places like Recluse, Lodge Grass, and Verdigris. I started talking to a solemn cowpoke carrying a battered suitcase and a carefully coiled lariat. "I'm from Oklahoma," he told me. "I saved up my rodeo winnings and bought a fine little ranch, beef cattle and horses, close by the Texas border. My wife found out she couldn't have children and it broke her heart. She left home, ran away—left me a note that said good-by. I've been looking for her ever since. I've been everywhere: New York, Chicago, New Orleans, Los Angeles, Denver—I've hitchhiked all over the country, showin' folks her picture, asking them if they seen her. Sometimes somebody has—she works as a short-order waitress—but she's always moved on. I'll look for her till I find her."

He was a lean and fine-looking man; I expected his wife must have been lovely, some mythical beauty, to inspire his two years' search. But then he took his wallet out and carefully pulled out her photograph, a ragged color snapshot; there she was, colossal, more lumps than a sack of potatoes, smiling amiably in pin curls, a tentlike blouse, bulging slacks. An Indian named Deo Grass had been listening to the cowboy's story; he looked at the picture, took the Bull Durham cigarette out of his mouth, and chuckled, "Shouldn't be hard to find *her*!"

Exile, abandonment, extinction: The buffalo, of course, is the paradigm. In the mid-nineteenth century, there were still 50 million of them roaming the prairies; 30 years later, there were fewer than 1,000. They were killed for their sweet tongue meat, for their hides, to starve out the Indians who depended on them, and, simply, because they were wild. The final act of the extermination was the bone trade: Wandering whites and Indians burned off the prairie grass to expose the buffalo skeletons, gathered them by the wagonload, and stacked them along the railroad lines for shipment east, where they were used as fertilizer and in the refining of sugar.



I imagined horsemen on the horizon, yelling dissonant songs. It must have been glorious to be an Indian during that frail golden age.

Patricia D. Duncan

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There are accounts of bone ricks 12 feet high and a quarter of a mile long. Two and a half million dollars in buffalo bones. No wonder the plains are haunted.

Once, in memory of what was gone, I bought three pounds of buffalo meat in a store. I cut it in thin strips; held up to the light, they looked like strips of rough amber glass. I turned the oven on to 150 degrees, laid the strips of meat on racks, put them in the oven, and left the door open a crack. Hours later, I brought them out, brittle and light as balsa wood. I spent the rest of the day crumbling them up and pounding them into dust with a mortar and pestle. It was hard to believe, when I was finished, that the powder had ever been flesh; it looked mineral—a rare earth, dry, vitreous, and silver. I took it with me on several long, hard journeys. A pinch of the stuff exploded in my throat into a wild red thunderbolt of meat: a Native American communion.

Kansas Historical Society

One day, years ago, an anthropologist friend gave me a name and address on a piece of paper. John Strange Bear, my friend said, was perhaps the last great medicine man in the Dakotas. A few years earlier there had been several great medicine men; but one had died in a car wreck on the way home from a sun dance, another was blind and voiceless in an old folks' home in Rapid City, and another was touring the college lecture circuit and wanted Marlon Brando to star in a movie version of his life. Strange Bear, my friend said, was the real thing: an inheritor of the traditions of Crazy Horse and Black Elk, all of those wise men, those celestial comedians and chemists of vision whose lineage went far, far back into the Stone Age. This magic had come across the Bering Sea from Asia, with the Paleo-Indian hunters, 30,000 years ago. If anyone knew the old secrets, it was this man, Strange Bear.

The springtime I set out for the Dakotas was a wet, stormy one. The snow had barely melted on the plains and already there were thunderstorms. Tornadoes were reported here and there. Driving north, I saw that the low-lying fields along the highway were flooded; ragged lines of geese sculled across the sky. A fox red as rust darted away through the green, green grass. I imagined horsemen against the horizon, painted, feathered, yelling their dissonant songs. It must have been glorious to be an Indian, I thought, during that frail golden age of horses and guns. Ah, but such things never last for long.

I drove across the gnomic badlands of southeastern Wyoming, across the upper reaches of the North Platte, and then I turned east, into Nebraska, through the Sand Hills. The Sand Hills are . . . well, *improbable;* they shouldn't really exist. More on them later.

I turned north, across the state line into South Dakota, and then I was in Indian country: the Pine Ridge Sioux Reservation. The road coiled through more hills, past rough-hewn farmhouses, cabins, an occasional rickety trailer; here and there, cottonwoods chimed with birds, like elaborate calliopes. Angular cattle grazed on a rocky hillside; I passed a rude log corral with three shaggy bison peering out. When the road climbed out onto the hilltops, the country was suddenly boundless, spinning slowly around me, clouds piled at the far edges. A school bus went by, going the other way, its windows full of delicate brown children who stared at me with soft, shining eyes. It was not a long way to Wounded Knee from there: Wounded Knee, where the U.S. Army slaughtered 300 unarmed Dakotas, mostly women and children, on December 29, 1890. It was hard not to feel uneasy, a stranger.

The road turned to dirt, mud, crossing prairie as green as a mantis. I drove through a place I'll call Prairie Dog Town, just south of Bear-in-the-Lodge Creek. The road worsened. It was afternoon now, and thunder rumbled in the distance. I was traversing the very edge of the Badlands. To the north, the prairie crumbled off into pale sandstone buttes and rococo cliffs: disquieting country, the kind you visit in dreams.

The road took a last crook, and there it was, as my friend had described it: a flat stretch of prairie between two hills, with a cluster of cabins and trailers, a round corral, and a litter of old, broken-down cars and trucks, black and bleeding rust on the green Indian grass. Strange Bear's camp.

Edmund Carpenter, the anthropologist and filmmaker, quotes an Eskimo woman as saying, "We believe that people can live a life apart from real life." The man I saw standing in front of the cabin reminded me of that. He was small for a Dakota—only five and a half feet—and slim and sleek as an ermine. He stood out, somehow, like an enamel figurine. His face was sharp and fine, almost girlish; his hair, black, silky, must have hung two feet long down his back. He wore muddy Can't-Bust-'Em overalls, high-top logger's gum boots and a Caterpillar cap; when he shook my hand, his grip was hard and calloused. His gaze was disquietingly steady, like a movie gunfighter's. There was something strange about his voice, too, when he said hello and asked me who I was and how the drive up from Colorado had been. I couldn't put my finger on it at first, and then I realized that his inflections were all off. He talked like Bela Lugosi as Dracula, as if he were reciting a language he did not understand. A horse whinnied in the corral and ran in a tight, skidding circle, spooked, I guess, by the smell of a *wasichu*, a white man.

The thunderheads to the north were darkening, bruised with rain. We went inside the nearest cabin and sat down at the kitchen table. The floor was hard-beaten earth; the walls looked as if they had been assembled from four different sources and nailed uneasily together.▶

The lonely leitmotifs of the Great Plains: crushing emptiness and run-down homesteads (opening page), abandoned hopes and history-book memories (left and above).

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Source: https://www.industrydocuments.ucsf.edu/docs/zmwm0004

The shelves were covered with poverty food, USDA cans and sacks of potatoes. Strange Bear put on a big pot of coffee. "My wife left me," he said. "She ran off to Rapid City to drink. She said there's no money in the medicine man business and nothing to do out here." He laughed. "Money drives people crazy."

Medicine men do not seem to fit our common notions of human behavior, our logic; they slip like elvers through our weirs of analysis. Crazy Horse, for instance. (His real name was "He dreamt he was riding through a battle on a strange horse, riding slowly through the bullets and arrows; because of the horse's magic, he could not be harmed.") Crazy Horse's ability to predict the future was so reliable that his people used it to plan military strategy against the wasichus. Crazy Horse once predicted that the only thing that could kill him was *steel*, in the hands of a fellow Dakota. He was slain by an Indian policeman wielding a bayonet, fulfilling the prophecy. There are no photographs or portraits of Crazy Horse, and no one knows where he is buried; like King Arthur, or Merlin, or the Mahdi of Shiite Islam, he is not dead, not really. He is the eternal returner, the Once and Future Medicine Man.

Strange Bear talked and talked, as we sat at that skewed table on tipsy stools, drinking coffee syrupy with sugar and eating stew of salt beef and potatoes. Was he being funny, or was he serious? I couldn't tell. I had wanted to ask him all about the holy places in the Badlands, over in the Black Hills, and the surrounding prairies—naïve, presumptuous questions—but I never got the chance. The FBI was after him, he said, because of his involvement in the Wounded Knee occupation. Was I an FBI man? If so, he would read my mind and find out. But it didn't matter. *Nothing* could stop him, because he was a full-blooded Dakota—not like that Mr. Two Crows down the road. Two Crows *said* he was pureblood, but his eyes weren't Indian eyes, and he was half bald. Whoever heard of a baldheaded Indian? You couldn't trust half-breeds; besides, they were all racists. They were more white inside than Indian, and everyone knew how crazy and racist whites were. Why, when they settled the New World, they just opened up all the prisons and madhouses in Europe and shipped the inmates over to America. No wonder things were all screwed up. Someday a virus would come and wipe out all the white people and spare all the Indians and everything would be okay again. . . . "Here, have some more stew," Strange Bear said. "There's plenty."

The grass outside was full of crickets singing like a thousand tiny bicycle bells. When we went outside, the last dusk light was gone, and there was nothing but darkness and masses of fiery stars above. The landscape was black, with not a light beyond Strange Bear's little camp. An owl called somewhere down in the cottonwoods along the creek, and the Indian cocked his head to the sound. I thought I saw him smile. "This place is full of the spirits of my people," he said. "They are in the trees and grasses." His voice was soft, and he sounded like a completely different person. "You can hear them in the night, if you are real quiet." He paused, and again the owl hooted from the wooded draw.

The next morning I rose early and walked down behind the camp and across the little creek. From there the grasslands rolled north—forever, it seemed. I skirted the sun-dance circle, a rough fence of dried brown pine boughs, where Strange Bear gave a sun dance every summer. Don't go in the sun-dance circle, he had warned me the night before; so I did not.

The sky was tremendous now, boiling with silver clouds. The prairie was a carpet of grasses and weeds, thistles and flowers and thorns. (This prairie, I had read somewhere, had originally, aboriginally, been an intricate fretwork of woven plants: peppergrass, saltgrass, grama grass, porcupine grass, buffalo grass, prairie June grass, cat's-foot, hairy golden aster, skeleton weed, lamb's-tongue, wolfberry, knotweed, mustard, chokeberry, strawberry, pennyroyal. Now it survived only in a few isolated places like this. Most of the Great Plains had been plowed under and replanted with foreign hybrid grasses and grains.)

Two great moths, their wings fantastic, like mosaics of radioactive ore, mated on a dry stalk of weed. I rounded another forbidden place Strange Bear had described to me, a bluff where, he had said, so many medicine men had gotten visions that the place was dangerously loaded with spiritual power. "A young kid wandered up here one time by mistake," he said, "and the Thunder got a hold of him, and when he came down he was 40 miles west of here and he smelled like electricity."

I walked and walked, feeling a giddy kind of ecstasy; and the further I walked, the more I understood, or thought I understood, Strange Bear. There was a raw, inchoate power in this country, and it poured through the man like an explosion of light through a prism, casting mad colors. It was too much to expect sense out of it.

Passing a lone cottonwood, I came to a steep escarpment running north to south, where the grass fell away, and peered down into a jigsaw puzzle of gullies and hummocks that looked as if they had been sculpted out of clay and lime and rock salt: the Badlands. A deer trail, fresh tracks, led down a ravine and disappeared. There was an indefinable feeling, of *something* out there in those strange calcareous hills. I felt a prickling at the back of my neck; something almost but not quite visible stirred at the corner of my eye. I turned my gaze west; a red-tailed hawk was slipping low over the curve of the land, hunting.

When I got back to camp, it was almost dusk. An argument was going

Kansas Historical Society

Collecting buffalo bones for resale to sugar refineries and fertilizer plants was once a way to supplement income in a land never noted for easy pickings or the soft life.

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on, half in English, half in Dakota, between John and his brother, Wilson Strange Bear, who had wandered in from Rapid City that afternoon. Wilson, a big fat man in sunglasses and mechanic's coveralls, wanted to pull a fuel pump off one of the wrecked trucks out back, and put it on his own pickup. John refused to give it to him: "You still owe me for that carburetor!" Wilson accused John of acting like a sour-faced Anglo; John told Wilson that if he didn't drink so much wine in the Rapid City bars, maybe he could afford to *buy* himself a new fuel pump.

I walked away in the gathering dark, and sat in the tall grass till I heard Wilson's pickup start up and saw the headlights crawl out to the road and west toward Prairie Dog Town and Rapid City. When I came back to the cabin, John was already eating dinner, the same coffee and stew as the night before. "My father was a medicine man," he said. "Wilson could have been one too. But too much boozing. You can be falling-down drunk and still be a medicine man, but you have to be free of the stuff. As long as it doesn't rule you, anything is okay. I've done everything. I've been married five times. I used to drink a bottle of whiskey every morning for breakfast. I lived in Los Angeles for a year, shooting heroin and stealing to pay for it. I was in the Army in Germany. Now I just live back here in the hills, and nothing in the past matters.

"I did the sun dance four times." He pulled back his ragged work shirt to show the big, puckered scars, bone white against the dark hematitic skin, where the skewers had torn loose; it made me grit my teeth. "I did four visionfasts. They say when you do your fifth visionfast, you just disappear. Maybe I'll do that someday soon." He chuckled.

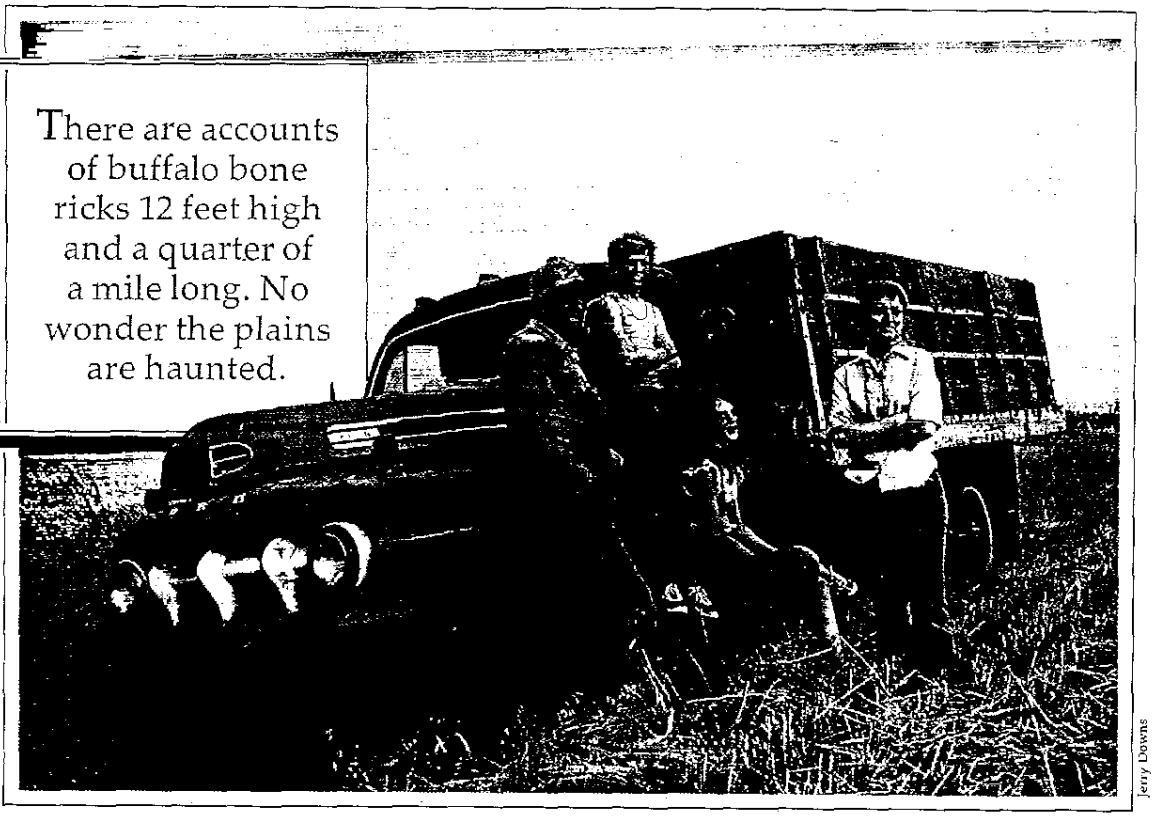
"I can't tell you about this country around here. Not because you're a white man; you're just in too big a hurry. It takes a whole year to get ready for a visionfast. You have to get a woman to sew you a star blanket to wear. You have to gather different kinds of herbs from all over; some of them are very hard to find. You have to learn to speak Dakota—the spirits around here all speak Dakota, and what if they came to you in the night and you couldn't understand a word they were saying? Then, all kinds of dangerous things happen on a visionfast. You might go crazy, or you might drop dead, or the Thunder People might decide to take you away with them, and nobody would ever see you again.

"Even if you get a vision, so what? A vision and a quarter will buy you a cup of coffee. Nobody cares about visions any more. Too bad."

Perhaps I should have stayed on there a while, through the brilliant summer at least, learning, accreting the slow, hard, nodular layers of magic. But it was just too hard. I thought about it that night: imagined myself becoming somebody different, a Dakota tongue in my mouth, a wizard's flinty heart in my breast . . . No. The next morning, early, I headed south; home, for Denver.

It was beyond me; it is hard enough just *living* out on the plains, on those blank hills. The plains can break your spirit. The wind howls through you as if you were a skeleton, nails you to a cross of ice, and it never stops. The windiest inhabited spot on earth is on the western edge of the plains, a place called

There are accounts of buffalo bone ricks 12 feet high and a quarter of a mile long. No wonder the plains are haunted.



Jerry Downs

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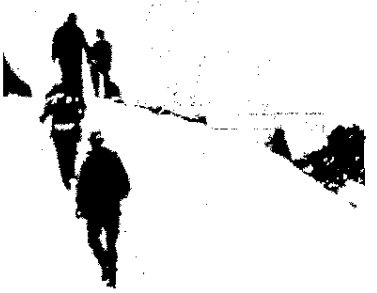

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Rocky Flats, Colorado. I lived near there for ten years, and I never got used to the wind. It blew so hard it made your teeth ache; it bullied the landscape, hurling dust and pushing hills, houses, and trees around.

If the wind doesn't get you, the distances will. Radar operators who stare too long at their sets are prone to a disease of the mind called *radar fever:* They begin to see things, fantastical things—fiery angels, Cheshire-cat smiles, Ezekiel's wheel, squadrons of winged skulls with diamond eyes. The same thing happens to the plains dweller. Perhaps that accounts for the plains Indians' voracious hunger for visions, their manic questing: lost, dried out, hollowed by the wind, you yearn and wander and search, like that poor cowboy looking for his low-rent Eurydice.

If the mysteries of the Great Plains have a heartland, it is the Sand Hills of Nebraska. The Sand Hills stretch 200 miles east to west, from the valley of the North Platte in the south to the Black Hills and Badlands of South Dakota in the north. It is one of the great deserts of the world, an American Rub'al Khali or Gobi. A desert in disguise. Walk out of Valentine, Cody, Whiteclay, Chadron—one of those ephemeral little Sand Hills cow towns whose main street looks like a painted stage set with nothing behind it—and dig. Beneath the brittle grass and the thin smoke of soil, you hit sand; you are standing in a sea of dunes. And if you dig deep enough, you will come to an even stranger realm: a vast, ancient subterranean ocean, the 156,000-square-mile Ogallala Aquifer, with more water in it than Lake Huron. A sea inside a desert wrapped in a green prairie.

Bill Ellzey

The sun sets on the rolling hills of Texas.

Anyone who has driven across the country on Interstate 80 has seen the Sand Hills; if you look north from Ogallala or North Platte, they are the dim, miragelike hummocks along the horizon. But almost no one knows anything about them. Crazy Horse died in the Sand Hills, at a place called Fort Robinson, near present-day Chadron. A century ago, the Sand Hills were the Serengeti of America; the prairies and marshes teemed with buffalo, prairie wolves, whole prides of mountain lions; in the eighteenth and nineteenth centuries, the fur trappers worked the headwaters of rivers such as the Loup, the Elkhorn, and the Niobrara, and lakes like Moon, Hackberry, and Pelican. Most of the big game is gone now, but deer and coyote are still found in the draws, down in the pocket forests of willow, cottonwood, ash, and plum; turkey vultures, golden eagles, and red-tails still ride the skies.

I had a friend who was born in the Sand Hills country and grew up there, on a cattle ranch north of Ogallala. Her name was Martha Schaller, and her family, German-American, had moved to western Nebraska from Minnesota two generations ago, back in the 1880s. They had started out as sodbusters: Martha's great-grandfather dug a pit house out of the prairie soil and roofed it with a canvas tent the first winter they were there. He wanted to farm, but the best farmland, down in the North Platte Valley, was already taken; so he took to cattle ranching. The family owned 12,000 acres, two-thirds of it range, the other third creek bottom irrigated with wells.

Martha was six feet tall and weighed about a hundred pounds, still wore the Levi jacket she had gotten for her thirteenth birthday, smoked little black cigars, and had been a model in Paris.

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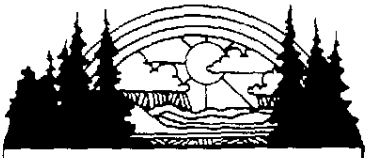
Her childhood was a honky-tonk fairy tale. Her grandfather flew his own plane until he was 80 years old, cruising down to Mexico with his cronies to hunt, fish, and carouse. Her mother had gotten mad at her father ten years ago, and hadn't said a word since; she communicated by writing notes.

The hills around the ranch, where Martha rode her pony when she was a girl, were full of enigmas. Once as she rode home at winter dusk in a swirling Great Plains blizzard, her horse spooked and she looked up and saw (she said) an enormous *white wolf*, three feet high at the shoulder, leap the barbed-wire fence and race away across the white prairie. There was also an eroded sandstone bluff back in the hills, and when you crawled in with a flashlight you found yourself in a vault that went as high as 50 feet in places. And there were bats: tens of thousands of the ruby-eyed little leather devils hanging upside down. It was like crawling into Hell. One summer when Martha went home to visit, she told her father she was going to ride out to the bat cave the next day, for old times' sake. "You won't find nothin'," he said. "Why not?" she asked. "Well, a couple of years back, we had a rabies scare in the county—skunks, wild dogs, coons. I wasn't sure but what the bats might have it too. So Ed Weicker and I went up there and dynamited the entrance," He laughed. "There's nothin' there but a big old pile of rocks."

> I never got used to the wind around Rocky Flats. It blew so hard it made your teeth ache; it bullied the landscape.

It was as if that was the beginning of the end, Martha said. The wells started to run dry a couple of years later, wells that had been giving sweet cold water since 1890. They drilled new ones, but half of them came up bone dry; they hired a water dowser, but he got bit by a rattlesnake and went back to Cheyenne. It was the same all across the Great



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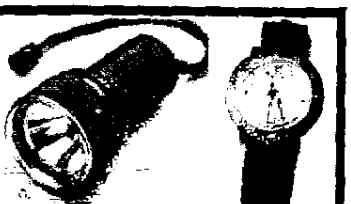

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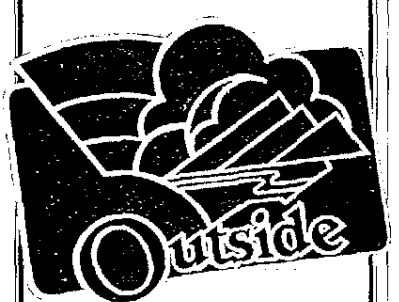

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Plains, from Rocky Boys Cree Reservation to Levelland, Texas: The Ogallala Aquifer, the mysterious hidden sea that made farming and ranching on the plains possible, was drying up. Geologists and hydrologists said it was because of the cities — Denver, Wichita, Lubbock, and the rest. The cities were pumping water out of the aquifer faster than the rain and snowmelt could replace it, pumping it out and using it on lawns and golf courses and suburban parks.

The last time Martha went home to visit, she found her father sitting at his desk with a half-empty bottle of Jack Daniel's and a mess of farm journals and scientific reports. "It's all over," he told her. "Sand Hills cattle ranching's dead. We've got maybe 30 years left, and then the whole business is going to dry up and blow away; from Denver to the hundredth meridian, this country's gonna look like Afghanistan. The dirt farmer and the rancher's gonna be as gone as 50 million buffalo, as dead as Crazy Horse, as rare as a set of jackalope antlers. Ed Weicker and I and every other rancher in the county should have crawled in that cave there with the goddamn bats and dynamited the door down from the inside."

Someday I will have to go back there, to the Sand Hills, or the Llano Estacado, or one of the other lost archipelagos out on that withered sea of earth. Perhaps to the Little Missouri Grasslands; I have an obscure U.S. government map of the place that looks as if it were drawn by Borges or Lewis Carroll. Places such as Hidatsa Village, Lone Grave, Mary (1908), Poker Jim Cemetery, Adobe Wall, Bicycle, Sophie's Nipples, The Last Buffalo Hunt in North Dakota. Looking at the map, I imagine a tall nineteenth-century bicycle on a grassy hilltop in the wind; a few miles away, Sophie lies naked on a brass bed on another lonely hilltop; nearby, Indians in plumed top hats, riding horses and Model T Fords, wave rifles and whiskey bottles as they chase buffaloes from horizon to horizon, a chase that never ends. . . .

In a way, it would be a shame to spoil such a wonderful map by actually going there and seeing the places themselves; but then again, on the plains my dreams, strange as they are, may even fall short of the strangeness I find waiting out there.

Rob Schultheis is a frequent contributor. This article is adapted from The Hidden West, *just published by Random House.*

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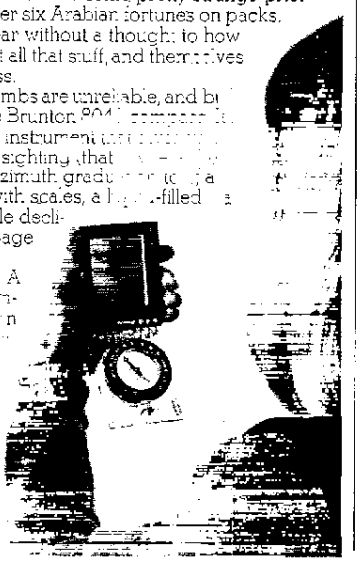

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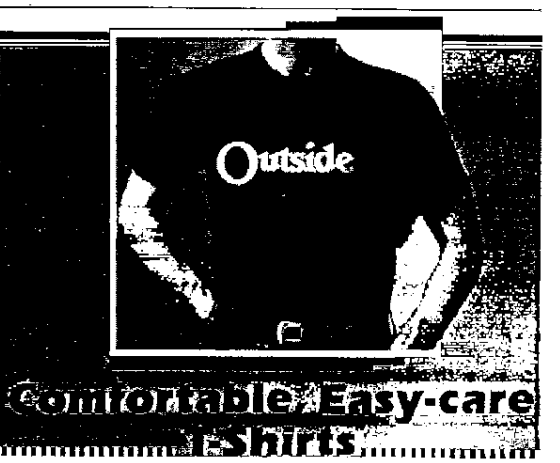

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Alone at the Top

Continued from page 36

climbs in late morning and force himself to finish before dark. "It is true," Messner says. "It was too difficult for me to start in the dark."

Before he succeeded on Nanga Parbat in 1978, Messner had twice set out to climb the mountain solo. Both attempts failed—not because of Messner's physical condition, which was excellent, but because of his mental state. The second attempt came in 1977, the year Uschi was to divorce him; he gave up while he was still on the hike to base camp, later writing, "Suddenly . . . I am overwhelmed by such bleak despair that we have to turn back. Soloing an eight-thousander has become in an instant a matter of no import; Uschi, I now know, has left me for good, and the passion I felt for this project has dissolved in a wave of indescribable loneliness."

It is no accident that Nena was waiting on Everest in 1980, that Ursula Grether was waiting on Nanga Parbat and K2 (though she had to be evacuated from the latter after an ankle injury). Messner is ensuring himself far more than a base-camp companion; the waiting woman is a deep source of confidence. "In my first expeditions," he says, "I suffered because I had no girlfriend at base camp. I don't think it is so important that I am suffering, but it is important that my whole person have an inner quietness. And I reach it much easier if I have a person that can stay with me."

In the maze of Messner's inner feelings, supportive women are inextricably connected with overcoming loneliness. In his first Everest book, he wrote, "The only person on whose account I could give up climbing is my mother . . . . She is one of the very few people who really understands me." Messner reveals in *The Challenge* (1976) that before the Hidden Peak climb Uschi leveled a kind of ultimatum: " 'If you had to choose,' Uschi asked me at length, after we had been sitting silently side by side, 'choose between the mountains or me—which would it be?' " Messner's evasiveness made the answer clear to her.

Faux, the biographer, sees significance in a childhood experience of Messner's—as described by Messner's mother. It seems that Reinhold, after being teased by a schoolmate, beat the boy up so badly that he was sent to a doctor. Reinhold's father wanted to punish his son, but the mother interceded; she claimed that Reinhold had dispensed the proper justice. Messner himself tells another childhood story "A few days ago, my mother gave me small book. She wrote about all of u when we were children. There is on line where she describes how each chil acted. She says that when we were al playing, I always had to be th shepherd; my brothers were the sheep. think this sentence is still very im portant for my own understanding o myself."

It makes a provocative psychological constellation: an angry, aggressive boy who channels his rage into ambition; his deep love for his mother, and a corresponding fear of loneliness; the attempt to find a haven from loneliness in adulthood through heroically supportive women; the death of his brother, for which much of the world blames him. It is tempting to see those early concerns, so candidly laid forth in his books, as the source of the distrust Messner now displays toward critical journalists and suspect teammates. But those concerns also account for much of the drive that has made him his generation's outstanding mountaineer.

Discussing his future, Messner sounds restless and ambivalent. "I am killing myself with working too hard," he says. "When I give away a date [for a lecture engagement], I feel like a pris-

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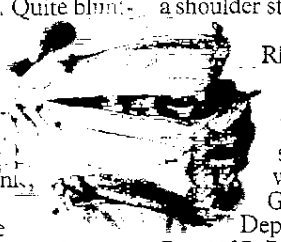

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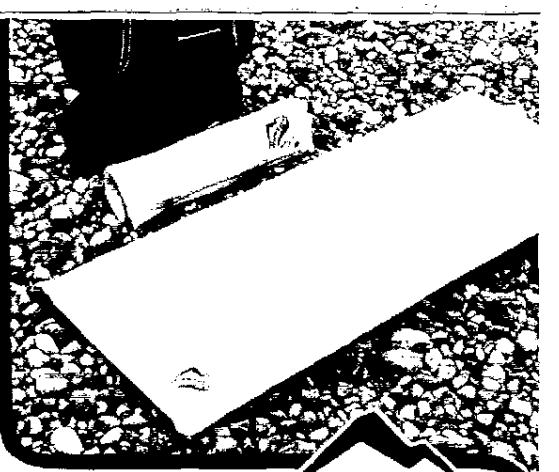

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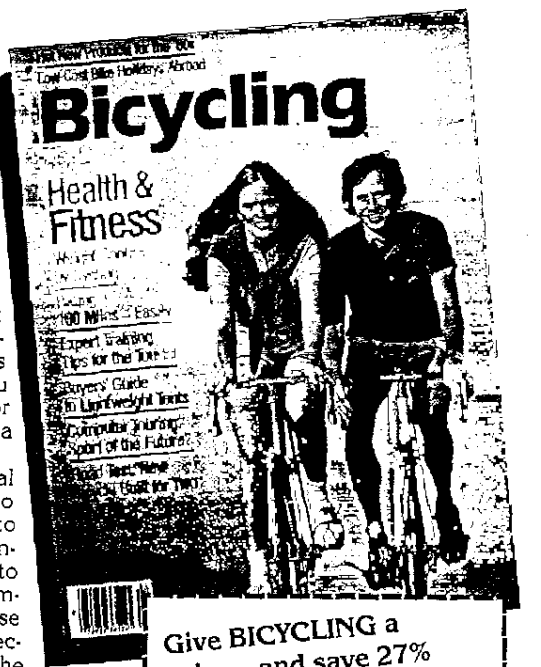

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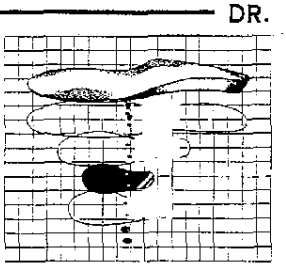

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oner, because I know I have to wait, I have to be there. I have to climb more in the future if I hope to be able to have the same impact that I had in the last years. But in the last half-year I worked so hard that I am losing quite all my energy."

On the horizon stands Messner's own vision of a personal mellowing: "Just now I am not so interested in doing the highest peaks alpine style. I am at least as interested in going to Tibet to see what's happening there, to Bhutan to live with the Bhutanese, just to see the country. That's at least as interesting for me as climbing the mountains."

It is hard to escape the conclusion that, of the two men, Habeler is the happier, the closer to resolving his own paradoxes of achievement and contentment. But one emerges from an acquaintance with both men with a deep admiration for their singular excellence. It is easy to point a finger at Messner; in a sense he sets himself up for it. Beneath the oversensitive skin, however, there is a powerful psyche animating the man to an exquisitely accurate calculation of what he can get away with in the mountains. It is worth remembering that he climbed Everest twice without oxygen, Nanga Parbat solo, Hidden Peak and K2 alpine style, with most of his toes lost to frostbite.

One emerges, also, with a strong sense of how much both men have lost in the rupture between them. Both cite as personal heroes Shipton and Tilman, those inseparable friends who, as Habeler says, "did exactly the same thing that we wanted to do later on—they started it." Shipton and Tilman lived long and explored distant ranges and oceans right up to the end. Today no one cares which man reached the summit of Mount Kenya first in 1929, which one broke the trail up the Aghil Pass in 1937. We care about their shared vision and the sunny example it set for future mountaineers.

One wishes Peter Habeler and Reinhold Messner an evening together, say around 1995, when they might sit before a fireplace somewhere in a snowbound Tirol and drink to the days 20 years before, when nothing mattered more in life than finding the line on the next hundred meters of the Northwest Face of Hidden Peak—when they labored in the bliss of their craft, at the heart of the mystery that is precocious brilliance, alone in the Karakoram.

David Roberts currently lives in Boston. His book about great exploration hoaxes will be published soon by Sierra Club Books.

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Down the Lazy River

Four spring trips for the unhurried paddler

By Jerry Sullivan

When Lewis and Clark hauled their dugout canoes upstream through Montana's Missouri Breaks, they were startled by the "visionary enchantment" of the cliffs along the river, carved by wind and water into "a thousand grotesque figures." Cottonwoods grew on the low ground along the Missouri. Prairies topped the bluffs. Herds of bison, elk, and pronghorn appeared along the river banks, with the wolves and grizzlies that preyed on them.

The wolves and grizzlies are gone now, along with the bison. The pronghorns still graze the prairies. The cottonwoods, once cut to fuel the river steamers, have grown back. Bighorn sheep, reintroduced 20 years ago, hang on. Elk, reintroduced 30 years ago, thrive. The cliffs look much the same, and golden eagles still soar above them.

Today you can see the antelope and feel the same enchantment from a canoe on flatwater navigable by all but the most inexperienced paddlers.

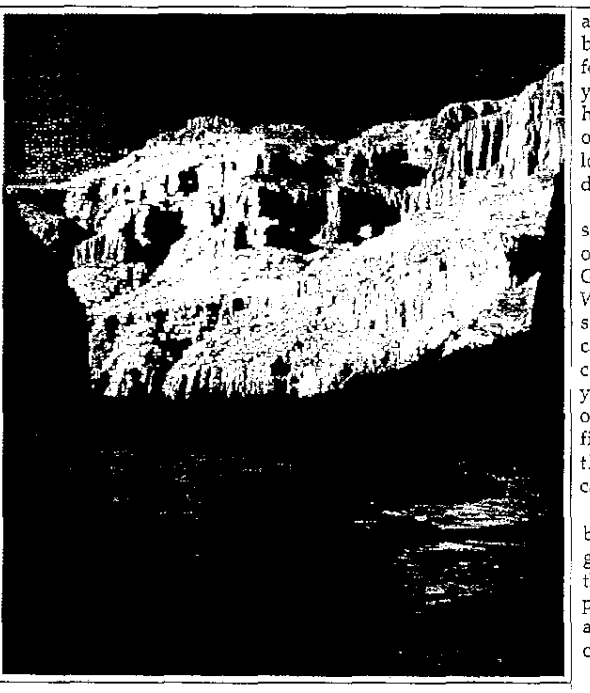
Most of the quieter rivers in this country are lined with cornfields or factories or worse, but a few are still wild enough to make canoeing interesting. The Missouri through the 149-mile Wild and Scenic portion in Montana is a choice spot, but so are the Rio Grande through the Big Bend country in Texas, and the entire length of the Buffalo in Arkansas. And you can add a fourth that is not exactly a river, but a chain of bays and tidal creeks along the southwestern coast of Florida, where logs in the water have a way of turning into alligators and where North America's few remaining crocodiles are holed up.

Each of the four is big enough to give you a leisurely seven-day trip, with plenty of time for fishing, swimming, or exploring side canyons and ridgetops, and each offers opportunities for shorter trips as well. All four are particularly pleasant in the spring, when the water is plentiful and you'll avoid temperature extremes. Sometimes the going is so easy on these peaceful streams that all you have to do is keep the bow pointed downstream; the river does the paddling. Sometimes you have to paddle hard and pay attention. With one possible exception—on the Rio Grande—you will not have to take your canoe out of the water.

With no portaging needed, you can comfortably carry a fair amount of gear. That means you can eat and drink rather well along the way. (Of course, if you leave behind any wrappings, cans, bottles, or other debris, you will be swept away by a flash flood or eaten by alligators.) On two of the four trips, you'll have to carry your water, and water is quite heavy. A reasonably generous individual ration of a gallon a day adds eight pounds a day per person to your load.

Bring along a portable stove for cooking, especially on the Missouri, the Rio Grande, and the Wilderness Waterway, where firewood is scarce. If you've got to have a campfire, build it in a garbage can lid—something else you'll have to carry—and not on the ground. When the fire's out, dump the ashes in the river and leave your campsite clean.

All four of these trips can be made with the aid of guides if you want them, although their services are expensive. You can rent canoes and obtain more complete outfitting if you need it.



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The Rio Grande: deep canyons and hot springs

Back in the days when the Sioux were still contesting the question of who owned Montana, the river steamers came up the Missouri as far as Fort Benton only when the river was high. The river is wide but not very deep, and the riffles that paddlers slip through easily were hazards for early steamboats.

Below Fort Benton the river valley is broad and the bluffs slope gradually upward. But beyond Coal Banks, 40 miles downstream, white cliffs close in on the river. And beyond the Judith River, 90 miles downstream, the badlands start, shale and sandstone sculpted into pinnacles and walls and gorges and turrets and strange shapes that look so contrived you are tempted to think that someone carved them on purpose.

Safety requires camping above the river's high-water line. And be cautious about camping in cottonwood groves. ▶

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It is possible to drink the river water if you first subject it to the following treatment: Bring water to a boil and keep it boiling vigorously for 15 minutes. Then skim the scum off the top and let the water settle overnight. In the morning add three or four packages of Wyler's Lemonade Mix, stir, and drink. But it is somewhat more sensible to carry your water. You can get refills at both Coal Banks Landing and Judith Landing, but be prepared to carry a four-day supply.

The U.S. Bureau of Land Management requires paddlers to get a free permit before starting downriver. The permits should be available at Fort Benton, Coal Banks, and Judith Landing. There is a quota on the permits, but so far even the busiest days haven't approached the carrying capacity the BLM has set for the river.

The Missouri is only one of more than 20 floatable rivers of varying difficulty in Montana. You can also float the Yellowstone through 300 miles of prairie or the Madison through mountain meadows, or paddle past trumpeter swans on the Red Rock.

The Big Bend of the **Rio Grande** is a looping curve around the southern end of the Chisos Mountains. The surrounding country is desert at the lower elevations and rather dry woods up high. The river creates a long strip of green through the arid lands, attracting animals—and people—to its banks.

The Rio Grande has cut five separate canyons in Big Bend National Park. The longest is 17 miles by river. In the deepest places the canyon walls rise 1,800 feet above the river. The westernmost canyon, Santa Elena, is also the roughest, with serious whitewater not to be undertaken by anyone but the skilled. Put in below Santa Elena at Castolon, and you can float 107 river miles to LaLinda, Mexico, without encountering anything very difficult. The toughest rapids, called the Tight Squeeze, in Mariscal Canyon (rated Class II or III, depending on water levels) can be portaged if you think it is too much for you.

Hot springs are scattered along one section of the river. You can bathe in one—105 degrees—at the site of a former resort on the Texas side, in Hot Springs Canyon. A few small villages and scattered houses lie along the Mexican side of the river. In the little village of Boquillas, at the head of Boquillas Canyon, the cantina sells cold beer.

You can float the Rio Grande through Big Bend year-round, although

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the water levels are usually quite low in winter. In spring, they go up. If they get *too* high, the Park Service closes the river to canoes.

It is usually very hot in summer, with readings in excess of 110 degrees. The local story is that it gets so hot that paddlers jump into 98-degree hot springs to cool off. When the rainy season begins in July, the temperatures abate slightly. The rain comes in afternoon thundershowers, sometimes quite intense, but usually brief. If they are hard enough, though, the rains cause flash floods that can send the river level up several feet very quickly. It's wise to camp above the high-water line, and never to camp at the mouth of a tributary creek, where a flash flood might sweep you into the river.

Paddlers need permits to run the river, and you can get them at the park headquarters or at ranger stations. The Park Service requires all canoes to have an extra paddle and an extra life jacket on board.

During a particularly wet spring, you can put a canoe or kayak in the **Buffalo River** at Boxley, Arkansas, and take a wild ride through some very challenging whitewater to Ponca, six miles downstream. But most trips on the Buffalo start from the low-water bridge at Ponca. The bridge is an unofficial and very unscientific river gauge. With 17 inches of air under the bridge, you can expect to drag your canoe over the shoals. Less than 6 inches is more water than you want, an invitation to an unscheduled swim. The best canoeing lies between these extremes.

The ten miles below Ponca are among the most beautiful on the river. The Buffalo sweeps in a huge S past Hemmed-in Hollow, with its 200-foot waterfall, and under the 500-foot Big Bluff. This part of the river is not technically difficult whitewater—not even Class II, except in very high water when you shouldn't be on the river—but lots of beginners get dumped. Capsizing is not as awful as it might sound. The river won't suck you under; the dumped beginners always survive. However, if your best down bag is in the canoe, it behooves you to be cautious.

Below Kyle's Landing the river is generally peaceful, but the scenery continues to be spectacular. Bluffs alternate with open valley and the hollows of tributary creeks. The deeper pools make excellent swimming holes. Most of the lower river is floatable throughout the summer, but the Upper Buffalo fades away before July. Remember that sum-

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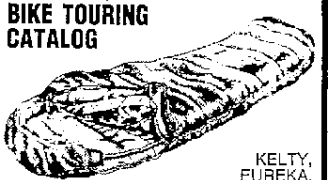

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mer in the Ozarks can be hot and humid, with plenty of ferocious chiggers, so it's best to plan for a spring trip.

The Park Service allows camping anywhere along the river, although they encourage people to use their campgrounds. Gravel bars are good spots because they are mostly bug-free.

The Ozarks are rich in good floating rivers; the Current and the Eleven Point, in Missouri, are especially pleasant. None of the other streams offer quite as much unbroken wild country as the Buffalo, but for shorter trips, they are excellent.

The whole **Everglades** is a river, a slow seep of water south from Lake Okeechobee to Florida Bay. Along the southwestern coast, mangroves grow in the shallow brackish water, forming fragile islands. The Wilderness Waterway wanders for a hundred miles through broad bays and along narrow tidal creeks among the mangrove islands. It is always sheltered from the open sea, but several passes let you slip out to open water and miles of wilderness beaches.

During the summer rains, the Wilderness Waterway is very hot and very mosquitoey. In midwinter it is not quite so hot and a little less mosquitoey. The spring season is a good middle ground, but the sand fleas are around nearly all the time. The Park Service suggests a bug-proof tent—and a No-Pest Strip to hang inside it—along with as much insect repellent as you can conveniently carry. What you get for enduring the bugs is the possibility of seeing two of North America's rare animals, the American crocodile and the manatee—the huge, placid sea mammal that browses the bottoms in the river mouths. You'll see birds by the thousands: egrets, herons, ibises, ospreys, and bald eagles. And even—a long shot—flamingos.

There is no fresh water anywhere along the way; so you'll have to carry the whole week's supply. Camping is in designated campsites, many of them on shell mounds left by the Calusa Indians. You'll need a permit for any backcountry campsite.

Shorter flatwater trips are also easy in the Everglades. From Flamingo, at the south end of the Wilderness Waterway, you can do a one-day paddle to Cape Sable and camp on a white sand beach. Or, if your commitment to canoeing is largely symbolic, you can take a morning's paddle around a loop trail at Noble Hammock—a good way to work out the kinks of winter.

Travel Information

Missouri River: The Wild and Scenic section of the Missouri is administered by the U.S. Bureau of Land Management (Airport Road, Drawer 1160, Lewistown, MT 59457). For $3 they will supply you with a set of topographic maps showing the river and the land along it. The BLM can also supply the names of outfitters who rent canoes and other gear. You can expect to pay $10 to $15 a day for a canoe. More complete outfitting, including tents and cooking gear, could run $125 to $150 for a two-person party on a seven-day trip. Shuttle costs are extra: Expect to pay $150 for a party of up to four if you run the whole length of the Wild and Scenic section. *The Floater's Guide to Montana*, by Hank Fischer (Falcon Press Publishing Co., Inc., Stapleton Bldg., Rm. 314, P.O. Box 279, Billings, MT 59103; $6.95), is a good introduction to the area.

Rio Grande: No canoes are available for rent in or near the park; so you will have to bring your own. Shuttle service is available from river runners in Terlingua. The Park Service (Superintendent, Big Bend National Park, TX 79834) will supply their names and addresses. Expect to pay about $100 for the full distance from Castolon to LaLinda. *Running the Rio Grande*, by Mary E. Humphrey (AAR/Tantalus, Inc., P.O. Box 893, Austin, TX 78767; $5.50), is a detailed guide.

Buffalo River: The Park Service (Superintendent, Buffalo National River, P.O. Box 1173, Harrison, AR 72601) will send you a list of 22 canoe liveries that can supply canoes for $20 a day, including shuttle costs. *Missouri Ozark Waterways*, by Oz Hawksley (Missouri Department of Conservation, P.O. Box 180, Jefferson City, MO 65102; $1), is a good guide to more than 30 rivers in Missouri.

The Everglades: Expect to pay $13 to rent a canoe for a day. The cost goes down to $8 to $9 a day for rentals of a week or longer. Outfitting, which means everything you need except food, is $20 a day per person; rides to and from the trailhead are included. The Park Service (Superintendent, Everglades National Park, Box 279, Homestead, FL 33030) can supply information on canoe trails or outfitters. *A Guide to the Wilderness Waterway*, by William G. Truesdell, is available from the Everglades Natural History Association at the Park Service address for $3.95.

Jerry Sullivan, a frequent contributor, last wrote for Outside *on birding.*

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Fly-fishing

Continued from page 55

flight, because their coloration changes in motion. Whatever imitations you have in your fly box that best approximate the naturals in size, color, and shape should be your first choice.

If you can't detect a hatch, the trout will take what they can get. Try a general "attractor" pattern, something fairly conspicuous, with nice bushy hackles and a splash of color, red or yellow. Royal Wulffs, Humpys, Rat-Faced McDougals, and the like will get the attention of foraging trout.

In the early stages of fly-fishing, being able to identify insects isn't nearly as important as simply paying attention to them. The human brain, of course, is very good at discriminations of size, shape, and color. If you happen to be carrying the right imitations, matching the hatch is a fairly simple business.

THE RIVER

The river is the real world, with all its complexity, ambiguousness, and built-in causations of misery; and it is best to go out into it childlike, armed with a few helpful rules that you can remember in the clutch. Where the fish are and whether they'll be interested in your offerings will depend on the physical characteristics of the stream, its temperature, the occurrence of insect hatches, and perhaps the most unfortunate complication, what you are doing out there.

First, the fish will have positioned themselves where they can find the most food with the least expenditure of energy—which means water that has been slowed by rocks or obstructions or the bank itself, but which gives the fish good access to insects and food floating by. You'll find trout holding in the lee of a stump in the water, or at the tail end of a pool, or in the vectors of various deeper riffles. Even the banks of the river slow the water enough to offer good holding positions to the feeding trout.

Next, keep in mind the trout's natural cautiousness. It is crucial to success. Trout will choose the feeding spots that give the best means of escape into darker, deeper water; and they will stop feeding and refuse to take your fly as soon as you do something clumsy. Early on, this will happen often, so be prepared to keep moving upriver, trying new spots. If you cast to a particular spot

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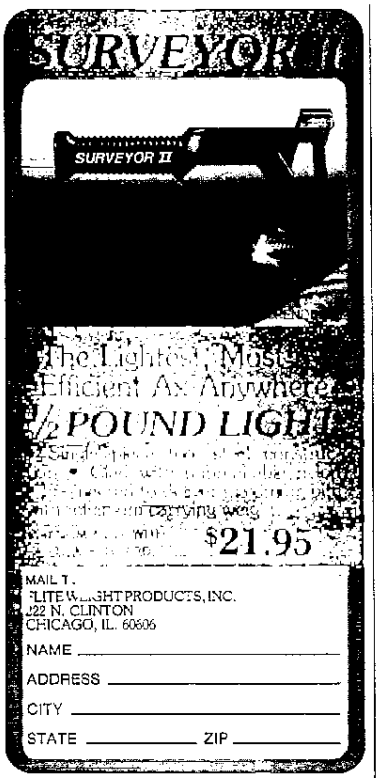

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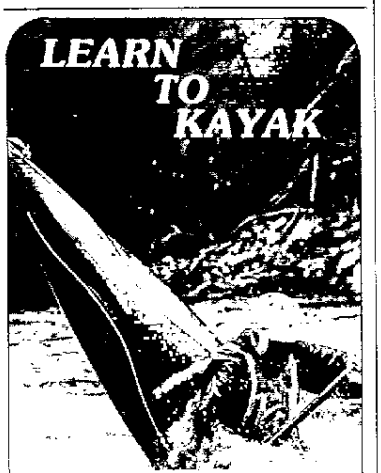

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three or four times without a strike, you are either not giving the fish what they're eating, or you've done something to "put them down." If you see a trout feeding but not taking your fly, tie on another fly and try again. If a trout suddenly stops rising, move on to the next likely spot. He's down, and there's nothing to do about it.

Trout can't hear you, but they can see well overhead and to the sides, and any sort of quick motion or shadow will immediately cause them to stop feeding and get cautious. So, while it is a good idea to scout a stretch of river for likely holding spots, the fish may spot you and stop feeding before you have cast your first line, especially if you're tromping along the high banks. The best scouting approach is slow and stealthy and low to the ground; and if you can't avoid being seen, be prepared to wait a few minutes for them to resume feeding. Any sort of quick motion or shadow will put them down—yours, that of your floating line drifting overhead, even a tangle of "invisible" tippet material.

To your potential advantage, everything the trout sees is subject to the laws of light refraction below water. A trout in three feet of water, for example, can see the surface directly above him, a "window" of perhaps six feet in diameter, an area that enlarges the farther down he is and diminishes the closer he gets to the surface. Beyond this window is an area called the "mirror," which extends the visual range to the sides but not at the surface. For 30 feet away, for instance, a trout won't be able to see you if your total height is less than five feet off the surface—but he may be able to see the flash of your rod overhead. Generally you should approach fish from downstream; they almost always face upstream, unable to see you. If you take advantage of this blind spot, you can sneak up to them, sometimes to within a few yards.

Of all the variables that determine whether a fish is feeding, perhaps the most important is water temperature. Trout feed most actively in water of about 55 to 61 degrees, a level that occurs toward midday when the water is coolest early in the spring. In summer the range occurs earlier and later in the day as the entire river begins to warm above the optimum temperature at midday. By July in many rivers the optimum feeding temperature hits only at night. In the fall, the pattern reverses.

Unfortunately this information doesn't mean much unless you carry a thermometer. But if you're going to be fishing a river for a few days, it's not a bad idea to take readings and adjust your fishing time accordingly. My first time out, for instance, an early September morning on the Snake River near the Tetons, I hit the river almost wild with anticipation at about 7 A.M., the air temperature not much above 40. I was shut out all morning and finally broke for lunch completely frustrated and thinking about leaving soon. But by noon, the water had warmed in the mountain sun. As I finished my sandwich and halfheartedly plopped a few final casts out, the trout broke for lunch too. I caught about eight nice rainbow and cutthroat in the next half hour. Had my timing been much worse, I might have given up on the whole thing right there.

Peter Miller

PRESENTATION

The critical moment, of course, is the presentation of the fly to the trout—the sequence in which the fly comes into view, the fish sees it, and takes it or doesn't. At each point, the fly should closely imitate the size, shape, and behavior of a real fly, or it will be rejected.

A fly arrives troutside two basic ways: on the surface of the water (the classic dry-fly presentation) or from beneath the surface (called wet-fly fishing). The dry fly imitates—but only roughly—an insect that has floated up from the stream bed and is hatching on the surface. Because of light refraction, the dry fly will appear to the fish as a backlit, bushy shadow, with the body of the fly up off the water and the hairs, or hackles (which imitate the insect's feet),

In the window: The netting of a brown trout demonstrates light refraction as well as proper technique (above).

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dappling but not penetrating the surface tension of the water. Only as long as the hackles stay dry, through the application of small amounts of fly dressing (a waxy substance like petroleum jelly), does this visual effect work as an imitation.

The most difficult and crucial aspect of presentation is to avoid drag, an unnatural-looking pulling of the fly caused by the current pushing the leader ahead of the fly. The imitation no longer resembles the helpless floating fly, but something else—something being *pulled*, something with vibrations, shadows, and ripples emanating from it. Therefore, when casting, the floating line and leader should not hit the water absolutely tight, but with a bit of slack at the end.

The river is the real world: It is best to go into it childlike, armed with a few helpful rules.

With each cast, you will generally get only a few seconds of drag-free float. The best placement will put the fly slightly ahead of the trout, with the floating line to one side; the fly floats freely over the fish and doesn't drag until it is out of the fish's field of vision. To maintain a natural look, the transparent leader must be long, perhaps eight feet of nearly transparent filament in descending widths, absolutely free of knots. The smaller diameters of leader, 5X to 8X, are said to be invisible, but the larger sizes can be readily seen; it's important not to cheat on the width on your last three or four feet of line, or the fish will see it.

Obviously a lot can go wrong in the presentation of a dry fly—bad casts, visible line, dragged flies. You might consider trying the wet-fly presentation.

The wet fly is much like the dry in construction, except that the hackles are swept back and the body is more streamlined. It sinks rather than floats. The standard technique is simply to cast *across*, rather than upstream, and let the current pull the fly underwater and downstream. As the current pulls the fly across the river, retrieve it with a slight jerking motion. Wet flies, depending on their shape and size, imitate the underwater swimming of a variety of aquatic insects and minnows, and there are many variations of rod action and kinds of drift that will impart the motions of particular insects. Fishermen who are consistently successful learn to master a second kind of wet-fly presentation, called nymphing. A nymph is an imitation of the insect before it hatches. Since trout often feed selectively on these forms, a convincing nymph imitation and presentation will catch fish at times when other methods are coming up empty. Schweibert cites a study made on a Michigan river that indicated that the best 2 percent of the fishermen on a given river caught 17 percent of the season's fish. That certainly doesn't mean you're going to be shut out—just that there will be plenty of room for you to improve.

THE FIRST TIME

Prepare to invest a few sessions in ironing out the worst kinks in your technique before expecting any kind of success out there. But if you are diligent and *concentrate* on what you're doing, your learning may occur just quickly enough to coincide with some natural event on the stream. Suddenly, you will be in a position to catch fish: A hatch will occur, the fish will begin to rise; or you'll see some big guy sipping flies upstream a few yards.

It is essential, with this first surge of adrenaline, not to demand success of yourself—indeed, think of screwing up as the right and true thing to happen until your dues have been paid. Otherwise, frustration will impede your progress.

But don't get sloppy, either. Make *sure* your knots will hold when the fish strikes; don't try to get away with less leader than you need, or continue to cast with knotted-up leaders, because the fish will see it; don't assume that a slightly dulled point on the tip of the hook won't matter. All these things, you will eventually come to realize, *do* matter, and in the worst way: The little things, the details not taken care of, will be the margin of failure. You'll realize it just at the instant it becomes too late. Incompetence is no vice, but laziness is a needless disadvantage. It is easy to lose yourself out on the seamless river, flow-

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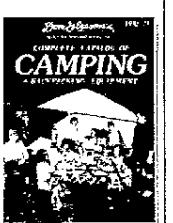

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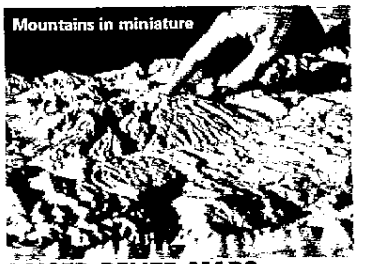

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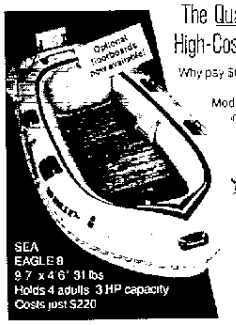

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ACCESS & RESOURCES

Catch and Release: Trout fishing is best—the fish large, healthy, and numerous—in rivers with nonstocked, self-sustaining populations. Therefore, plan to release most, if not all, of your fish—and in shape to survive. Don't play them any longer than necessary. Handle them gently, to avoid injury to chest walls. Remove the hook with needle-nosed pliers. And consider filing the barbs from your hooks to prevent tissue damage when removing.

Where to Fish: New England, Pennsylvania, the Upper Midwest, the Rockies, and the Pacific Northwest all have fine trout rivers; and some southern mountainous states, such as Tennessee, have pockets as well. Contact your state Department of Natural Resources for information and regulations.

Elsewhere, you can find great lake fly-fishing for bass and bluegill, which require special flies. And some of the best fly-fishing in the world is found in the Florida Keys—for bonefish and tarpon.

Books: Probably no sport has more good titles devoted to it, but here are a few to help you get started:

Flyfishing: A Beginner's Guide, by David Lee (Prentice-Hall, Inc., $7.95 paper, $16.95 cloth). Concise, complete, and well organized. Good for self-instruction.

The Trout Fisherman's Bible, revised edition, by Dan Holland (Doubleday, $3.50). Covers the ground adequately with fishing humor circa 1949, when originally published. You can't beat the price.

Joe Humphreys's Trout Tactics, by Joe Humphreys (Stackpole Books, $12.95). A good step toward sophistication, if you're ready to start outsmarting the trout.

Matching the Hatch, by Ernest Schweibert, (Stroeger Publishing Company, $6.95 paper). Without illustrations of the imitations, something seems missing. Otherwise, a fine introduction to stream biology.

John Rasmus is the managing editor of Outside.

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CANOE-KAYAK-WHITEWATER RAFT TRIPS, safety instruction, rentals, and sales. One, two & four day clinics in the heart of the mother lode. No experience necessary, write: National Outdoor College, Box 962, Fair Oaks, CA 95628 (916) 338-3600.

ECHO RIVER TRIPS, 6329M Telegraph Ave., Oakland, CA 94609 (415) 652-1600. Free color catalog of river trips in the West & expeditions around the

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GRAND CANYON RIVER TRIPS. Featuring deluxe seven day packages. Includes: Geology Professor, gourmet meals, iced beverages, round trip from Las Vegas and more. For free full color brochure write: White Water River Expeditions, Inc., P.O. Box 1249F, Turlock, CA 95381 (209) 634-1133.

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NORTHERN WHITEWATER EXPEDITIONS, P.O. Box 100-M, The Forks, Maine 04985. Phone (207) 663-2271. Whitewater rafting on the Kennebec, Penobscot and Hudson River Gorge in upper state New York. Write or call for brochure.

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WHITE WATER ADVENTURES, INC., Box 31M, Ohiopyle, PA 15470 (412) 329-8850/5986. Raft trips on Youghiogheny R., Ohiopyle State Park, PA. April-Oct; age limit 12 (norm)-14 (high) water. Also Cheat R. trips, WV, April & May; age limit 16. Send for brochure.

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CANOE MISSINAIBI & MOOSE RIVERS to James Bay, June 20-July 30. $550 inclusive from camp in N. MI. Also other canoeing, bike, & sailing trips. College credit optional. 17th yr. Pine River Camp, 9185 Lantern Hills, E. Lansing, MI 48823. (517) 332-3991.

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ADVENTURE CENTER, USA's foremost specialist in adventure travel worldwide including: Treks in the Himalaya; Overland expeditions in Africa, Asia & South America; safaris; hiking/camping trips in Hawaii, Australia & New Zealand. Free catalog & brochures. 5340-M College Ave., Oakland, CA 94618 (415) 654-1879.

ADVENTURES INTERNATIONAL, 4421 Albert St., Dept. O, Oakland, CA 94619 (415) 531-6564. Wildlife & wilderness, nature & photography trips. Kenya, Zaire, Zambia, Rwanda, Galapagos, Australia, India, Nepal & others. Whale watching in Mexico. Hawaii & Arctic! Brochure.

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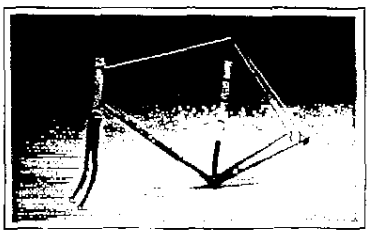
Bikes

Continued from page 56

geometry. A steep head angle of 74 to 75 degrees provides the greatest responsiveness, especially when combined with a short fork rake of an inch to an inch and a half. When control is less important than long-term comfort, as



David Arky/Cloverdale Press

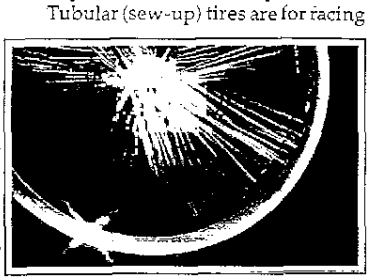
with touring, a shallower head angle of 72 to 73 degrees provides far more insulation from road shock, and a fork rake of two or more inches adds resiliency on rough roads. Handling, however, is mushy compared to a steeper setup.

Many dedicated cyclists own several custom frames, each designed for a specific type of race or tour. If you're shopping for a compromise, try testing a road-racing bike with parallel 73-degree head and seat angles and a wheelbase of less than 40.5 inches. Unless you habitually seek out ruined pavement, this configuration should provide sufficient protection from road shock without sacrificing sprinting capabilities. But if your heart really belongs to touring, you'll probably be happier with a parallel 72-degree setup.

WHEELS

Since other components can always be upgraded, it's wise to use most of your budget on the finest frame you can afford. Wheels, however, are not the place for penny pinching. On a bicycle intended for regular use, light aluminum-alloy rims are essential. Most ten-speeds priced below $250 feature cheaper and heavier steel rims, which take the joy out of cycling. And since lightweight rims also provide better braking in wet weather, they're safer.

Tubular (sew-up) tires are for racing only. Clinchers are easier to repair, more durable, and less expensive. In recent years high-pressure clinchers have become narrower and narrower, largely in the interest of paring down weight. The narrowest clinchers, however, are less stable and more prone to flats. They also increase the likelihood of rim damage, and they're rougher riding than slightly wider versions. A few millimeters can make a big difference; tires narrower than one inch are worth avoiding.

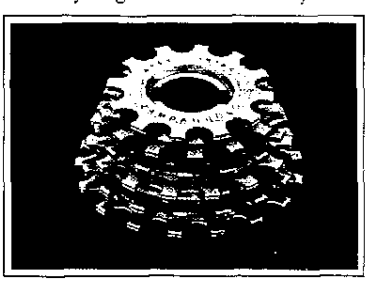


Sally Ann Shenk/*Bicycling* Magazine

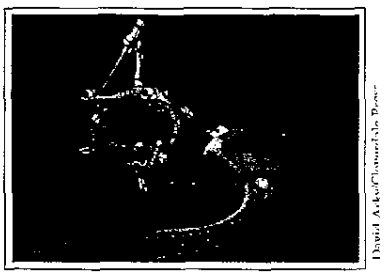
GEARING

Gearing is controversial; in two years *Bicycling* magazine has devoted no fewer than 60 articles to the fine-tuning of drivetrains. Production bikes, however, ordinarily come with more or less stock gearing; so the intricacies of the subject may safely be ignored. The rule of thumb runs like this: for competition, closely spaced gears with high ratios; for touring and hill climbing, widely spaced gears with lower ratios.

Especially if you're a novice, the best way to get a feel for the way individual gears translate into pedaling pressure is to take a test ride. Beginners tend to gear too high and pedal too slowly; don't be misled into believing that a racing bike fits your particular "riding style" better than a touring model just because it seems to give you a more thorough workout. It's far more efficient and far less tiring to pedal smoothly and rapidly in lower gears.



Gearing patterns are important, too. Classic half-step gearing provides ten distinct, evenly spaced gear ratios, but it does have a drawback: It often takes double shifting—changing both front and rear derailleur positions—to get from one gear to the next half-step up or down. Crossover gearing, in contrast, provides as few as six different ratios, but it's possible to run through them consecutively and shift the front derailleur only once. Alpine gearing, found on triple-chainwheeler 15-speeds and 18-speeds, is more complicated; but the overall aim is to ensure a good low for hill climbing, a good high for highway cruising, and a number of evenly spaced middle ratios for everything in between. If you're contemplating extended touring, an alpine setup is the pattern of choice, and the mechanical problems that plagued the design in the sixties and seventies have largely been solved.



David Arky/Cloverdale Press

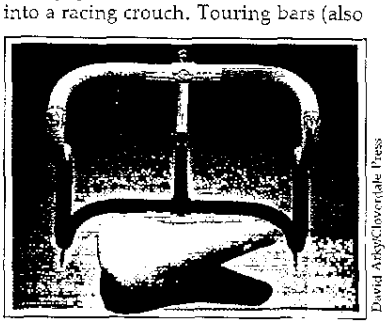
BRAKES

Because sidepull brakes require more force to engage, and thus feel stiffer, they're easier to apply and release in a hurry than centerpulls. Racers also like sidepulls because they're lighter. Centerpulls are more mechanically efficient; so they're softer and better suited to loaded touring and tandems. The newest centerpull design, Shimano's Parapull, employs a triangular cam that moves up and down to provide more caliper movement for a given amount of pressure than any other brake, sidepull or centerpull. At rest the Parapull calipers are far enough apart to facilitate wheel removal; in use they nonetheless stop the wheel faster than competing designs that require separate quick-release mechanisms for tire changing.

David Arky/Cloverdale Press

HANDLEBARS

Bars and stems intended for track racing are made from light steel tubing; versions intended for road racing and touring are fashioned from aluminum alloys. Both road and touring bends provide several comfortable hand positions, on top and on the drops, while steeply pitched track bars force riders into a racing crouch. Touring bars (also



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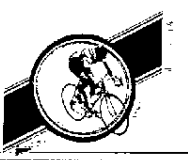
known as *randonneur* bars) are distinguished by a slight upswept bend beginning at the point where they attach to the stem, a shape that makes the hands-on-top position the most comfortable riding posture. Although somewhat unsatisfactory from the standpoint of pedaling efficiency, the touring bend is the most sensible choice for riding in traffic.

SADDLE

Good leather saddles are still available, but they're rapidly losing ground to padded synthetic seats that weigh less and require less break-in time. The new molded saddles are slippery and nonabsorbent; the better models feature layers of foam padding and thin coverings of leather, synthetic suede, or (for a price) buffalo hide. Like most of the rest of the bicycle, saddles have long been designed exclusively for the male anatomy, but one manufacturer, Avocet, offers an entire line of saddles designed for women. Since the female pelvic bones are much more widely spaced than the male, Avocet's anatomic seats mean no more pain in the posterior.

PEDALS

Look for platform pedals such as the Avocet Model IIIs, which provide better foot support than standard rattrap cage versions. The platform design tapers where a shoe tapers and allows the use of fully adjustable toe clips (toe clips on cage pedals may be adjusted from side to side, but not forward and backward). The result is a better fit, which translates into more efficient pedaling.



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The desire for a hand-built bicycle—whether founded on the hard rock of physical necessity or the wet marshes of personal idiosyncrasy—remains one of life's more fulfillable passions. You may dream in vain of owning a Matisse, a Maserati, or even a Rolex. But by setting your sights on a Cinelli or Guerciotti and indulging in a little parsimony, you can afford the best that money can buy.

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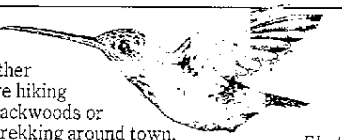

Whether you're hiking the backwoods or just trekking around town, changeable weather calls for carrying a lightweight jacket along. Pak Foam offers you two, the Acadia Anorak or the Franconia Windbreaker. Either way, you get the wind and rain fighting quality of urethane-coated ripstop nylon, hoods that stay zipped in a collar pocket until you need them and all the rugged wearability you expect from Pak Foam. What's more, they're ultra-light (8 oz!), compact and come in their own ditty bags, ready to travel. Available in royal blue or yellow. When you're in the ring with the elements, it makes sense to be with the outdoor champ. Pak Foam.

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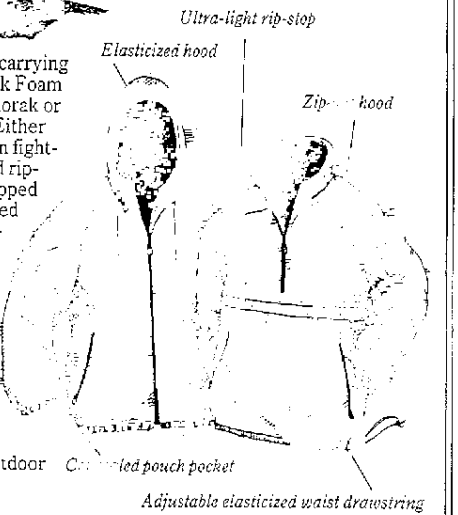

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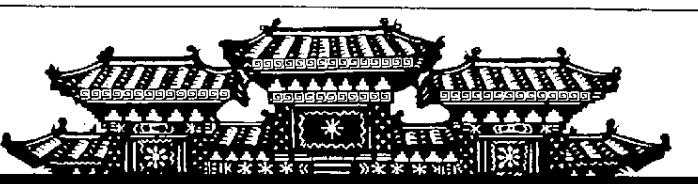

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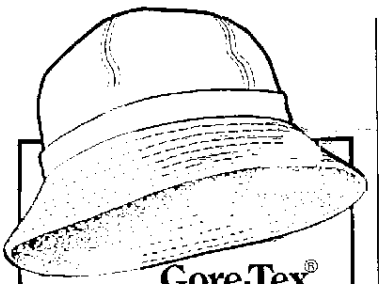

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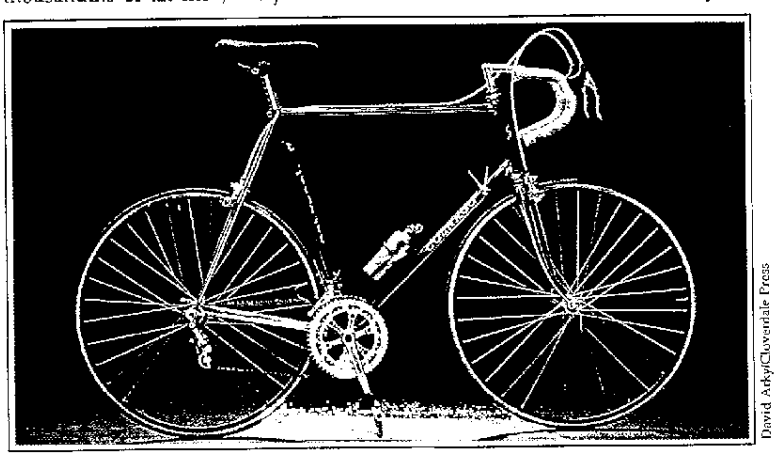
denominator of custom bicycle frames. Like better off-the-rack bikes, custom frames invariably are assembled from lightweight butted steel-alloy tubing, fitted together with reinforcing lugs, and brazed instead of welded. Custom framebuilders, however, usually braze with silver solder, which flows at 1,100 degrees Fahrenheit (as opposed to 1,400 degrees for the more common brass) and provides a greater margin of protection against heat-induced metal fatigue. Even more important is the care with which a custom frame is mitered before brazing takes place. Basically, mitering is the process of shaping a tube to fit snugly around the tube it butts against. Most good bicycles feature mitered tubing, but the sixteenth-inch tolerances of production models still allow tubing to flex inside the lugs. Custom frames, mitered to tolerances measured in thousandths of an inch, are joined so tightly that the fitted tubing behaves as one piece of metal.

Construction of this sort translates into greater pedaling efficiency. A frame that flexes steals your energy, especially when you're cranking hard. With a stiffer custom frame, more of your exertion is transferred into forward motion. For a racer, a hand-built bike can mean critical seconds saved. For a pannier-laden tourist, the reduction in frame flex makes long uphill grinds less tiring.

If you're a touring cyclist, your best bet is a frame from Britain. A few British builders even go so far as to construct special touring racks to fit specific brands of panniers. For racing, Italian frames have a strong track record, and quality of finish is unexcelled. Italian builders, however, will not build touring frames. French-made cycles have a reputation for functionalism, often to the detriment of aesthetics. French frames with flawless paint jobs are even rarer than Italian touring bikes.

Despite the relative inexperience of American framebuilders—few were in business before the bike boom of 1973—a fair number of them are now doing work regarded to be equal to that of continental framebuilders who've been in business for decades. Your local bike shop can supply you with names and addresses of the better domestic builders; bear in mind that often a builder is employed by or affiliated with a shop or its racing team. In metropolitan areas, try to obtain an objective opinion by inquiring at several shops. And don't be shy about asking for references. No reputable builder will refuse to put you in touch with satisfied customers.

If you're of average proportions, an alternative to waiting the weeks or months for a frame to be built to your specifications is to choose a custom frame in a standard dimension. The price is about the same, and the choice of braze-ons and finishes is limited, but many framebuilders and some bike shops stock standard hand-built frames for immediate delivery.



David Arky/Cloverdale Press

A custom bike such as the exquisite Colnago has all the cachet of a $60,000 Ferrari.

As you might expect, putting your personal stamp on a ten-speed isn't cheap. Custom frames start at about $350 to $450; and if you want a racing model made from Reynolds superlight 753 tubing, expect to pay at least $750. Most frames come with headset, fork, and bottom bracket included; but everything else is extra, including brazed-on accessory holders for shift levers, cable stops, water bottles, and racks. Tricked out with Italian components, a frame such as a Colnago costs a cool $2,000.

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Life of the List

Continued from page 60

That expedition brought Goddard something besides satisfaction: the public attention he needed to fulfill his ambition of becoming a professional explorer. When he returned home from his journey, hundreds of letters and telegrams from clubs across the country awaited him. "They each offered to pay me $500 to stand in a tux and talk about my Nile expedition for an hour," recalls Goddard. For the next year, he wandered through this country, lecturing at knife-and-fork clubs, museums, and town halls. A naturally shy man, Goddard found the lecture-hall circuit almost harder going than kayaking the Nile. ("Getting up in front of a crowd is still the most difficult thing in my life," he says.) But he pursued it, and by the end of his tour he had accumulated enough money to pay off the expenses of the entire expedition and finance his next one: the exploration of the Congo River. His life now took on a pattern of trips, films, and talks. He would organize one of the dream trips from his list, make a movie of his explorations, and return home for the lecture circuit. He also somehow managed to acquire both a B.A. degree and an M.A. degree at the University of Southern California; and he married his first wife and fathered two children.

I first met Goddard 16 years ago. He came every semester to our high school to present one of his films, and we would watch him on screen, the Great Explorer. Bare-chested or khaki-clad, a red scarf around his neck and bush hat smartly tacked up on one side, he was always plunging into dark jungles or heading off across a tall-grass savanna. A square-jawed man with a dark, natty mustache, he narrated his films from a podium in a fast-moving spiel of humor, personal philosophy, political opinions, and death-defying tales. He told corny one-liners ("Here I am trying to look like a thorn tree while I film this rhino that is *only 50 feet away!*"); he imitated the sounds of lions slurping up water by slurping loudly into his microphone; he lectured us on the evils of Communism, racism, drugs, and alcohol; and he told us about his life list. The films, with their home-movie quality, were never great. But we all admired the man.

Goddard today is 57, still trim and remarkably youthful-looking. He has completed 108 of his 127 goals and in the process has received the honors due an explorer: memberships in the Royal

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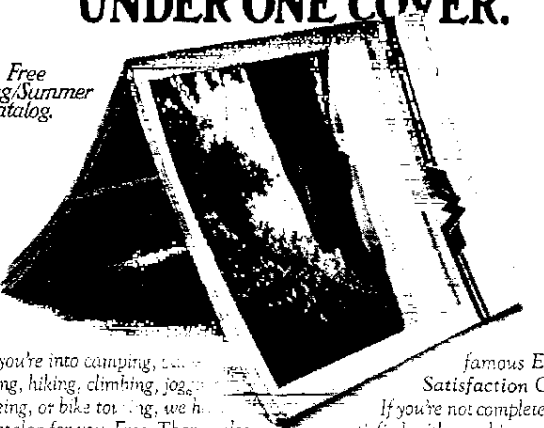

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To a great degree the list that Goddard created has in turn created him.

Geographical Society of England, the New York Explorers Club, the Chicago Adventurers Club, the MACH-II Club. Yet he still lives in a Los Angeles suburb, and to pay for his bills and responsibilities (he has five children from his first two marriages, plus a new "beautiful green-eyed" wife), he delivers some 300 lectures a year. He packs his films ("Andes to the Amazon," "Turkey Delights," "The Adventurous Life") and projector, his recorder and tapes with sound effects, his exercise cables, a few suits and ties, and hits the road.

On the Midwest circuit, there's a quick show in Minneapolis; then he drives nonstop to Chicago, presents three films there, attends a dinner at the Adventurers Club, shows another film; the next morning, it's off to the Quad Cities of Illinois and Iowa for appearances at St. Ambrose and Pierce colleges. At each of his scheduled performances, he walks quickly on stage, gives a few introductory remarks, and then launches into his narrative. Invariably the person running the projector or dimming the lights makes a mistake, and Goddard impatiently rushes off stage to correct the problem. At the end of the show he is polite and affable to anyone asking questions, but he is also in an unmistakable hurry to leave.

His lecturing is also in keeping with the tradition of the gentleman-explorer. British adventurers have been telling their tales for two hundred years to their often disbelieving compatriots, and nearly every explorer today (from Thor Heyerdahl to Jacques Cousteau) faithfully makes the rounds. And the homebound audiences of young, old, and middle-aged admirers never seem to tire of the stories, the films, the adventure.

"I put the danger and excitement in my lectures on purpose," explains Goddard after showing a film in which he comes close to death 12 times. "I do it partly because I think others who might want to try something like skydiving should recognize the danger and do it with the necessary skills and common sense. But there is also some hype in it. My tour managers have advised me not to downplay my adventures. So I walk a fine line between being honest toward myself and being successful as a lecturer."

Goddard's success keeps him on the circuit from September to June. The summer months are reserved for making films and working on the list.

For the list is still an integral part of his life. It has provided him with a framework for his accomplishments, it distinguishes him from other explorers, and it gives him material for every lecture. Goddard says he refers to it because audiences find it "inspirational." But he has carried the list with him in his mind for the last 42 years—he knows it by heart; he can easily tell you what goal 77 is and whether or not he has accomplished it.

To a great degree, the list that Goddard created has in turn created him. Living by its dictates, he has visited 117 countries, kayaked 15 remote rivers, climbed 14 major peaks, and developed a resilient, extremely self-disciplined, and predictable character. He is essentially a self-engineered man who lives a life divided into two categories: Things Done/Things To Do. It's the kind of tactic that career counselors advise: Make a list of your goals; then make yourself into whatever it is these goals demand.

Goddard's programmed, self-willed approach toward himself and his life has not only produced results, it has eliminated the self-doubt and second-guessing that plague most adult lives. Almost assuredly he has never had and never will have a mid-life crisis. There is simply no time in his schedule for one. It is a simple equation, and perhaps because there is no room in it for reflection, Goddard can and does say that he has no regrets about his life. Few men of 57 can honestly make that statement. Yet few men of 57 are still being guided by their boyhood dreams.

What will Goddard be doing next year? Traveling, lecturing, and working on his list. Does he really believe he'll visit the moon? He does not hesitate: "Oh, yes. In my heart of hearts, I do believe I will. I never give up on any goal. That way when the opportunity presents itself, I can seize it and go."

Virginia Morell is a frequent contributor to Outside. *Her most recent piece was "To Be a Boatman."*

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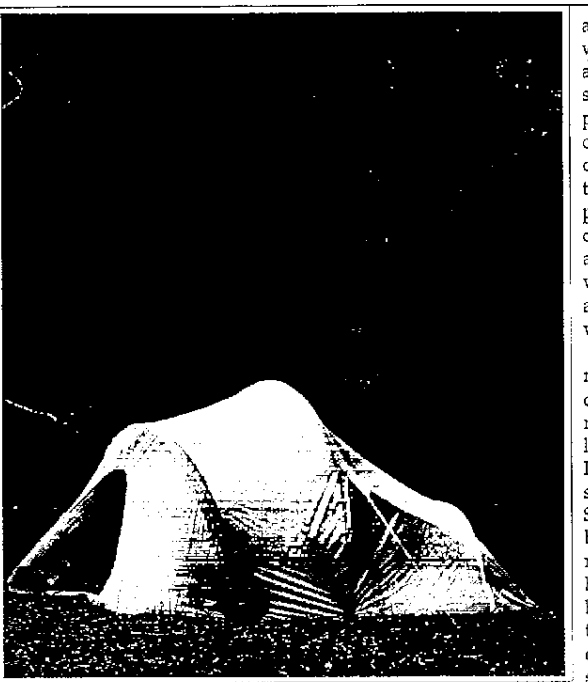
The Human Dimension

New tents that won't cramp your style

By Kief Hillsbery

Tents are on the rebound. During the heyday of the backpacking boom, new designs were as prevalent as mushrooms after a spring rain, but with the advent of Gore-Tex personal shelters in the late seventies, tent sales took a dive. Innovation gave way to procrastination; few manufacturers saw much percentage in perfecting full-sized shelters while consumers were standing in line for the latest in ultralight cocoons. By 1981, however, tiny tents seemed more like a fad than a functional alternative for outdoor living, and rampant claustrophobia prodded research and development departments into action. The results are just now making it into the mountain shops, and if you care about comfort, 1982 promises to be a very good year.



Barbara Cushman

The North Face Westwind: 5½ pounds and anthropometric design

From a distance, the latest tents bear close resemblance to their predecessors. There are arcs and domes and catenaries, modified hoops and canted trapezoids. Of the 12 designs we tested in the Santa Ynez Mountains and the Sonoran desert, only the Sierra Designs Sphinx presents a radically different silhouette. But beneath their familiar curvilinear canopies these shelters offer some agreeable surprises.

Consider, for example, construction materials. Ultralight pioneer Jack Stephenson's latest offering, the 2 Z, is made from a Mylar/polyester laminate so thin it resembles waxed paper, with a total weight of well under 2 pounds. At the other end of the spectrum, the 27-pound Coleman Genesis showcases a material called Evolution 3, a three-layer laminate of spun-bonded polypropylene that promises to replace canvas as the fabric of choice for car-camping tents. Originally developed by Kimberly-Clark for use in bedding, apparel, and upholstery, Evolution 3 is one-third lighter than canvas and won't rot or mildew, even if stored while wet. It also provides excellent vapor transmission without sacrificing water repellency; so condensation isn't a problem on chilly nights.

Tent designers are also rethinking suspension systems. Generally, there's more concern than ever for a fast, easy pitch, requiring a minimal number of guylines and stakes. With the Sphinx, Sierra Designs has taken this concept to the limit: The tent canopy is suspended from an exoskeleton of arched and bowed aluminum poles via Delrin plastic "Swiftclips," and may be erected by one person in less than a minute—even in a storm. The carabiner-like clips are attached to canopy seams with *eight* rows of stitching, and snap over pole junctions so easily and securely that the pole sleeves found on many other mountain tents seem destined for oblivion. Additionally, the Swiftclip system provides more generous clearance between tent walls and flysheet than sleeves, which lessens condensation and frost formation during winter camping.

Although it's not immediately apparent, the clip-and-exoskeleton arrangement also reduces the likelihood of pole damage. Indeed, according to a designer who worked on the Sphinx, the clip idea evolved because so many poles were returned either broken or bent at intersections. Some bent because they weren't totally snapped together, and others failed because the person put them in the wrong spot and jammed them in until they fit, which deformed the poles. With an exoskeleton, the poles are entirely visible, and it's a simple matter to move a misplaced pole from the wrong grommet to the right one.

In another pole-related development, more manufacturers are offering consumers a choice between fiberglass and aluminum poles. Although aluminum versions are both lighter and stronger, they're considerably more expensive and aren't really necessary for most three-season use. The newest Glassform hollow fiberglass poles are more resilient than solid-core formulations, and although they're presently available only from Sierra Designs, they'll soon be offered on tents from Early Winters and Wilderness Experience.

Predictably enough, several of the

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new designs we evaluated attest to the growing interest in ultralight equipment. The Stephenson 2 Z is the obvious example, but four other shelters weighed in at less than five pounds, and two of them—the Sierra Designs Flashlight and Sierra West Litehouse—are among the finest tents we've seen anywhere.

Bruce Robinson

The lightweights (clockwise from bottom): Camp 7 W. P. Cowcatcher, Sierra Designs Flashlight, REI LR 2, Sierra West Litehouse, Stephenson 2 Z

The Lightweights

Stephenson 2 Z

Leave it to Jack Stephenson to come up with a tent that permits nude sunbathing in crowded public campgrounds. Stephenson's new Mylar/polyester 2 Z is 87 percent translucent—clear enough to sustain a suntan but sufficiently filmy to preclude arrest for indecent exposure. Even so, the tent appeals more to weight-conscious hikers than to hedonists. At 1¾ pounds, the double-walled 2 Z is the lightest two-person tent on the market; a three-person version weighs barely eight ounces more. At first these tents seemed flimsy, but when they stood up to gusty winds without deformation or damage, we revised our opinion. We remain concerned about the fragility of the ripstop floor and the durability of the paper-thin pole sleeves. A groundsheet seems essential, and a close reading of the lengthy pitching instructions is well advised. $298 from Stephenson's Warmlite, RFD 4, Box 145, Gilford, NH 03246. The 3 Z sells for $379.

Sierra Designs Flashlight

With 34 square feet of space and a total weight of only 3 pounds 11 ounces, the Flashlight may have eliminated the rationale for all those cramped crawl spaces known as "personal shelters." Along with plenty of headroom, the Flashlight offers an easy pitch (no guylines needed), excellent flow-through ventilation, and a pole design that minimizes lateral sway. The hollow fiberglass poles are also specially reinforced with both longitudinal and circumferential fibers, and canted to ensure a drum-tight canopy. Although the Flashlight was the least expensive lightweight tent we tested, it outperformed the rest of the field. $155 from Sierra Designs, 247 Fourth St., Oakland, CA 94607.

Camp 7 W.P. Cowcatcher

Camp 7 touts the four-pound W.P. (for Western Pacific Railroad) Cowcatcher as "designed for four-season protection," but the tent really isn't suitable for snow camping. During intermittent rain showers the flysheet touched the canopy in several places; five minutes of hail caused the entire tent to sag. We also had problems removing the tightly arched solid fiberglass poles from their sleeves. On the plus side, the Cowcatcher stuffs down to a minuscule 22 by 5 inches, and it's roomy enough to comfortably accommodate two people and their gear. $187 from Camp 7, 802 South Sherman St., Longmont, CO 80501.

REI LR 2

The nicest feature of the Gore-Tex LR 2 is an optional vestibule that enables you to get inside the tent without bringing bad weather with you. The protected entryway is also good for cooking, and the 12 ounces it adds to the LR 2's 4 pound 1 ounce weight is an extra burden well worth bearing. The tent itself is a no-frills, aerodynamically designed A-frame: spacious for one, snug for two. Seams are factory-sealed, and the tent did not leak in a prolonged downpour. $264.95 from REI, Box C-88125, Seattle, WA 98188. The vestibule costs $29.95.

Sierra West Litehouse

No one else makes a tent like the Litehouse. It weighs 4 pounds 12 ounces, and provides enough elbow room for four people to sit upright. Setup requires only four corner stakes, and the full-coverage rainfly attaches without guylines or additional staking. And since the shock-corded aluminum pole sections measure only 14 inches, the rolled Litehouse fits easily inside backpacks and panniers. Sierra West makes no four-season claims, but we found the tent extremely stable in high winds and heavy rains, and mountain guides we know plan to take the Litehouse on ski trips next winter. The manufacturer offers a choice of upper canopies: ripstop nylon or Dacron netting. Both $247.50 from Sierra West, 6 East Yanonali St., Santa Barbara, CA 93101.

The Welterweights

North Face Westwind

(pictured on page 89)

The North Face buzzword for the shape of the 5-pound-5-ounce Westwind is *anthropometric*, which means the tent was designed to correspond to the dimensions of the human body. The asymmetrical floor plan provides plenty of room for stashing gear in bad weather, and the central sit-up area is surprisingly spacious for a shelter so light. Setup requires staking but no guylines (except in heavy winds); we found the Westwind much more stable with the flysheet attached. The entire tent, including three pre-bent aluminum poles, fits into a 5-inch-by-18-inch stuff sack. $260 from The North Face, 1234 Fifth St., Berkeley, CA 94710.

Sierra Designs Sphinx II

Thanks to the Swiftclip suspension system, the Sphinx can be erected by one person in less than a minute. Pitching is accomplished by positioning three shock-corded aluminum poles in opposing sets of grommets, then pulling the canopy up and clipping it onto the poles. Since the flysheet also attaches to

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the pole tips, guylines are unnecessary; the Sphinx is totally free-standing (in bad weather one fly guyline may be staked out in front of the door to provide a small vestibule for gear storage and protected cooking). We found the tent spacious enough for two campers, a dog, and a full complement of equipment; and the steeply angled roof and walls shed rain and snow better than any tent we've ever used. At 5 pounds 9 ounces, the Sphinx amounts to a quantum leap in four-season tent design. $269 from Sierra Designs. The Sphinx I, featuring hollow fiberglass poles, weighs 6 pounds 2 ounces and costs $249.

Eureka Compact Sentinel

Until you get the hang of it, pitching the Sentinel seems unduly complicated. But don't let the ten different poles and rods and unusual shock-cord loops intimidate you. When properly assembled, the self-supporting Sentinel is a mountain classic: rugged, stable, and incredibly taut. Other modified hoop tents are roomier, but few can match the Sentinel's resilience in gale-force winds. As for size, the Sentinel is in the one-squeeze-two category, which makes its 5 pounds 15 ounces somewhat excessive—at least by the ultralight standards of 1982. Still, it's an excellent value if you're shopping for strength and durability above all else. $232 from Eureka Tent, Box 2050, Binghamton, NY 13902. An optional vestibule sells for $58.50.

Prisma Drum

No tent we looked at was more carefully put together than the 8 pound 1 ounce Drum. The Drum is an expedition-quality geodesic designed for two people and all their gear, complete with snow flaps and an aerodynamically shaped rainfly vestibule that doubles as a doghouse. Two full-sized doors provide excellent ventilation and make the Drum far more hospitable in humid weather than most four-season domes. Best of all, the canopy is as taut as its namesake. $390 from Prisma Outdoor Products, Box 792, Norwich, VT 05055. Because each tent is made to order, expect a turnaround time of "a few weeks" before shipping.

Cannondale Wabash

The Wabash is a throwback to the days when backpacking tents were made to outlast their owners. It's heavy—8 pounds 12 ounces—but it's also strong, and thanks to double-walled construction noticeably warmer in cold weather than conventional tent-and-flysheet combinations. The huge vestibule, which includes two zippered entrances, significantly enhances the tent's versatility. Unfortunately, during two weeks of testing we never succeeded in properly seating the large-diameter aluminum poles in their grommets, possibly because the curved fiberglass arch sections were too rigid. But even with two pole tips seated in grommet pull-outs instead of grommets, the Wabash withstood gusty broadside winds. $295 from Cannondale, 9 Brookside Place, Georgetown, CT 06829.

Wilderness Experience Sanctuary

At 8 pounds 15 ounces, the Sanctuary is the heaviest backpacking tent in our sampling. Like the Cannondale Wabash, it's a rugged two-person design intended for four-season use. A double-coated flysheet and reinforced ferrules on the solid fiberglass poles help make the tent stormworthy, and with two doors and a center height of 44 inches, the four-hoop Sanctuary seems roomier than it actually is. It wasn't as taut as some of the other tents we tested, and on the first try it took one person 21 minutes to set it up (compared to 9 minutes for the Coleman Genesis). Nonetheless, the Sanctuary offers good value for the money. It will be an even better deal if the promised 5-pound-11-ounce version of the tent goes into production late this spring. The weight saving, due to lighter ripstop throughout, will reportedly not boost the price. $215 ($280 with aluminum poles) from Wilderness Experience, 20675 Nordhoff St., Chatsworth, CA 91311.

The Heavyweight

Coleman Genesis

Coleman goes curvilinear. The Genesis looks like a spaceship constructed from Handi-Wipes, and

Bruce Robinson

Coleman Genesis

wherever we pitched it, the tent attracted a crowd. At 27 pounds, the Genesis isn't likely to be seen on the Appalachian Trail, but it's unbeatable for car camping. The polypropylene Evolution 3 material more than lives up to the manufacturer's claims. We tested the tent in heavy rain and searing sun, and on two occasions camped in unprotected areas during gale-force winds. Despite its 7-foot-10-inch peak height, the Genesis didn't budge. The tent's built-in awning alone provides nearly 60 square feet of patio space, and the interior sleeps five or more. Ventilation is superb. Our only complaint concerns the do-it-yourself shock-cording kit for the aluminum poles. We'd gladly pay extra to have it done at the factory. $275 from Coleman Canvas Products, 250 North St. Francis, Wichita, KS 67201.

Bruce Robinson

The [illegible] (from left to right): Prisma Drum, Cannondale Wabash, Wilderness Experience Sanctuary, [illegible] Sphinx II (background), Eureka Compact Sentinel

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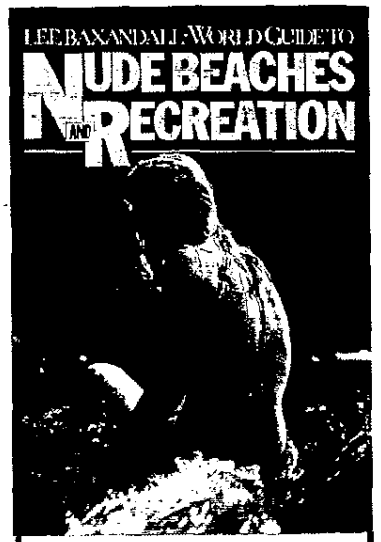
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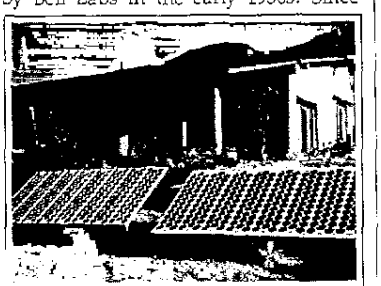
Solarwest Electric of Santa Barbara, California, offers a variety of photovoltaic systems for one-room cabins up to full-blown dream homes. The solar cells, which convert sunlight to DC current, were developed for the space program by Bell Labs in the early 1950s. Since



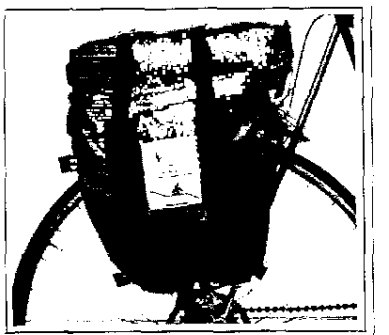
then, they have seen broad use in railroad signals, channel-marker buoys, and microwave-relay systems, and their once-prohibitive cost has fallen.

A complete system for a weekend retreat can cost from $1,000 to $3,000. Homes requiring daily electricity require a $4,000 to $8,000 setup, and larger homes, up to about $15,000. Solarwest's modular systems can be added to as demand increases.

According to Solarwest's Rob Robinson, utility power is cheaper than solar by a factor of ten, even computing the cost of current over the life of a solar system. But Robinson says, if you live more than a quarter mile from the power grid and must pay for installation of service, solar is competitive.

Solarwest's systems qualify for federal tax credits of 40 percent on the first $10,000 invested, and many states offer substantial credits as well. California, for instance, has a 55-percent credit that can be taken after the federal credit has been applied.

For a complete brochure, write Solarwest Electric, 232 Anacapa St., Santa Barbara, CA 93101. —Jim Sackett



Biker's Backpack

The common denominator of the best outdoor gear is simplicity. The Maine Hunting Shoe, the Ultima Thule soft pack, the Sleep Inn bivouac shelter—each combines durability with straightforward design and offers proof that less is more. On the other hand, more *can* sometimes be more: Swiss Army knives and multifuel MSR stoves induce apoplexy among devotees of Mies van der Rohe but nonetheless constitute some of the most versatile tools on the market. And for all its complicated instructions and seemingly superfluous hardware, the Convertible Backpack clearly belongs in the latter category.

It's a fully adjustable backpack with an internal frame, padded waistbelt, and 2,900-cubic-inch capacity. It's also a set of front and rear panniers, with a shock-cord mounting system that provides excellent stability on rough roads. The conversion requires a surfeit of zippers, webbing, snaps, and grommets, along with the largest collection of plastic buckles this side of the Fastex factory, but the Convertible does the job: When you want to stash your bike and head into the hills, the transformation takes only minutes. Not 5, as claimed by the manufacturer, but certainly less than 15.

The only drawbacks are price—$200—and weight. At nine pounds, the Convertible outweighs one set of front and rear panniers by four pounds, and a widely-sold internal-frame backpack with the same volume by six pounds. The Convertible's eight-ounce coated Cordura cloth and heavy-duty zippers seem unnecessarily bombproof in light of the pack's capacity and likely applications (you won't be pedaling to Dhaulagiri). Craftsmanship, however, is first-rate, and on weekend trips you can leave the front panniers behind and

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still cruise to the trailhead with a 1,825-cubic-inch packsack.

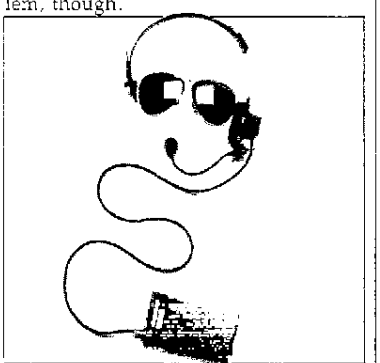
From Richard Jones Convertible Backpacks, Box 919, Fort Collins, CO 80522. —Mark Goodwin

Bicycling with Your Ears On

The loneliness of the long distance runner is renowned, but if you've ever biked eight hours a day, day after day, you understand loneliness. There is much to be said for tuning into the sounds of nature on a marathon bike trip. Still, enough is enough. Sometimes you want to shoot the breeze with your partner instead of listening to it whistle in your ears.

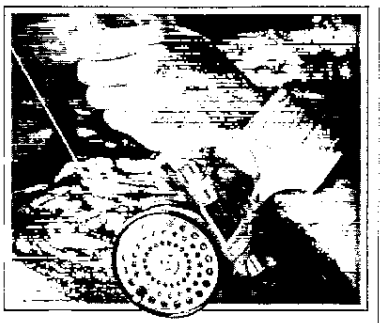
A pair of the new miniature FM transceivers, called Talkmans, permit you to do just that while you're still rolling. They work as well as some hand-held two-way radios, yet weigh only nine ounces (including headset) and allow you to use both hands.

The advertised range is one-quarter mile; however, in ideal conditions (unobstructed signals, no transmission interference from other sources) they'll work at a half mile. In congested areas with a crowded broadcast spectrum, interference is too great for effective reception. Ski patrolmen, mountaineers, hikers, and rescue squad members don't have that problem, though.



The only other caveats are that the voice-activated mikes take some getting used to (they take a second to activate and will cut off the first syllables of a blurted-out transmission). And, in this case, talk is not cheap: List price on each unit is $139.95.

Available from Standard Communications, Box 92151, Los Angeles, CA 90009. —Michael McRae



Pinpoint Casting

Fly fishermen learn quickly that a day of failure—no matter how glorious the scenery or the stream or the company—is simply no match for one of success. Whether the goal is a rainbow trout for supper or a catch-and-release memory of a lifetime, it is unquestionably more fun when that big one rises for your elk-hair caddis and you hook the monster and reel him home.

To that end, I've found it worthwhile to at least try any gadget promising to improve my success ratio. One that does is the Wristlok, from SIMMS of Jackson Hole. Owner John Simms has spent years guiding fly fishermen along the Snake River, and he's isolated some correctable—and chronic—casting problems that Wristlok should solve.

Wristlok consists of two rectangular pieces of Velcro-backed deerskin joined by a strip that is threaded through a pair of nylon rings. The rectangles are draped around the forearm about two inches above the wrist and fastened so that the ring-enclosed strip hangs downward. The rod's butt end is inserted in a loop formed by the strip, and both rings are then adjusted so that the wrist can move back only far enough to achieve an optimum casting arc.

Because the Wristlok does not allow the wrist to fall past the critical "loading point," it ensures a tighter loop and increases line speed and accuracy. The device is flexible enough to fold into a vest pocket or cram into a pack rod case. The only problem I encountered was initial difficulty fastening the gadget and adjusting the rings without help. That, however, solved itself in time.

Wristlok comes in one size and costs $10. It is available at sporting-goods stores or can be ordered from SIMMS, P.O. Box 2913, Jackson, WY. 83001.

—Howard Rothman

Staff Support

Few aids to the pedestrian traveler prove as versatile as a good walking staff. It's an ice probe and a tripod, a shoulder to lean on and a third point of balance in steep terrain. Brandished threateningly, it will intimidate all but the most recalcitrant carnivores. And in certain precarious situations a walking staff can save your life. Edward Abbey describes how he once faced "death by starvation, slow and tedious" while stranded on an overhanging cliff deep in the Grand Canyon; if it weren't for his skill in inching up sandstone while balanced atop his staff, we'd be living in a world without *Desert Solitaire*.

Perish the thought. Iron-tipped alpenstocks have long been available in Europe, and in the past year at least two domestic models have made their debuts. The simpler version, the Ultimate Shaft, is fashioned from solid walnut, lathed into a continuous spiral that provides a comfortable grip at any point along the staff. The neoprene tip is reinforced with a half-inch metal washer and capped with a solid brass band that reduces the likelihood of ground-level splintering. At $24.50, the Ultimate Shaft is not cheap, but it's a good-looking, reliable alternative to not-always-trustworthy downed branches.

The aluminum-alloy/stainless-steel Nomad Staff, on the other hand, is something more than just an alternative. There are separate handles for mountaineers, backpackers, hikers, and "flat landers." There's a camera mount and a pike with a snow basket. There's an emergency fishing gig that can also be used to catch snakes. And there's even a special cup attachment for dipping into inaccessible streams.

Alas, the price of all this is prohibitive. A Mountaineer handle with a full complement of options runs $110; the bare-bones Flat Lander sells for $42. Nomad Staffs are well made, and they're undeniably stronger than the competition, but I wonder how many people really need all that stuff. I know I don't.

The Ultimate Shaft is available from Wind River, Box 20609, Sacramento, CA 95820. For information on the Nomad Staff, write to L. L. Engineering, Box 1708, Thousand Oaks, CA 91360.

—Kief Hillsbery

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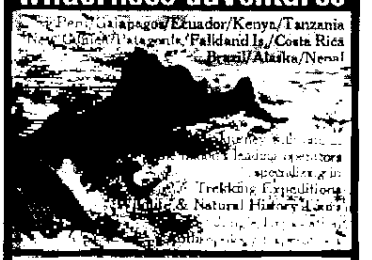

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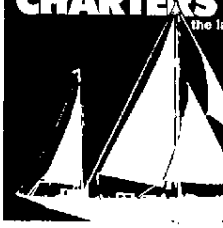

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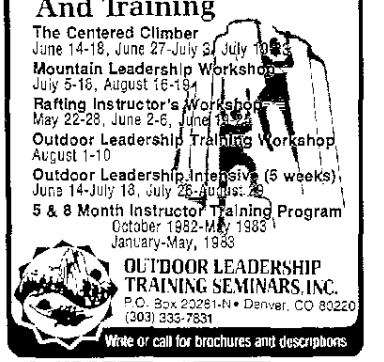

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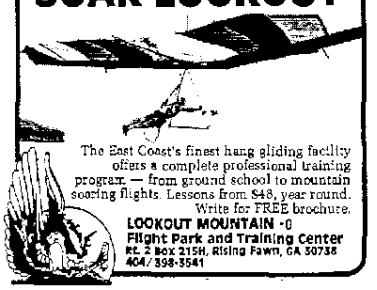

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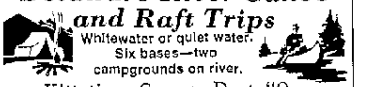

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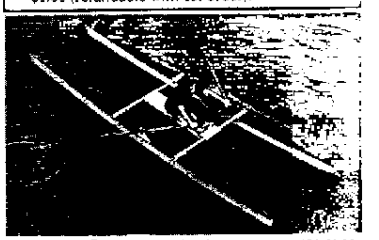

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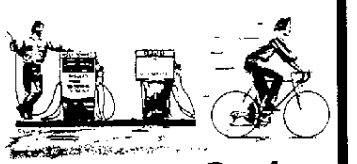

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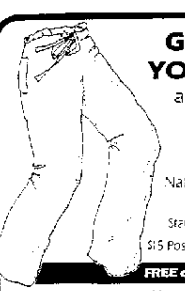

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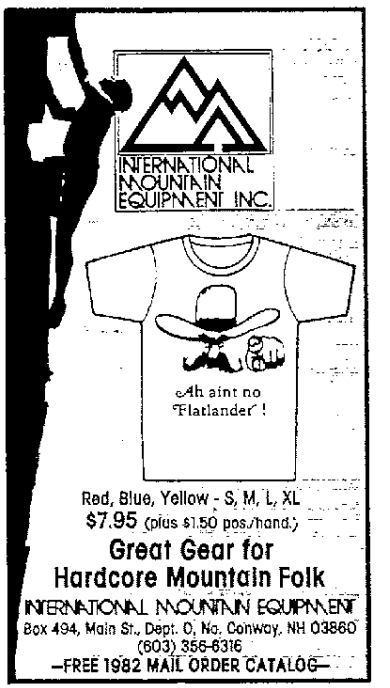

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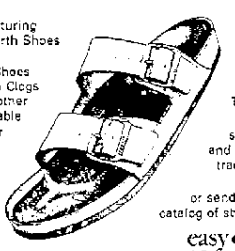

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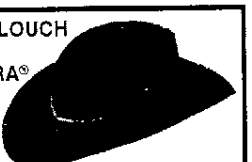

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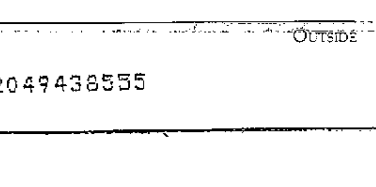

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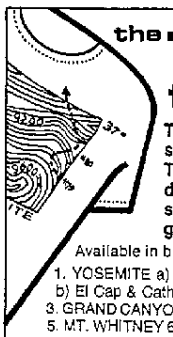

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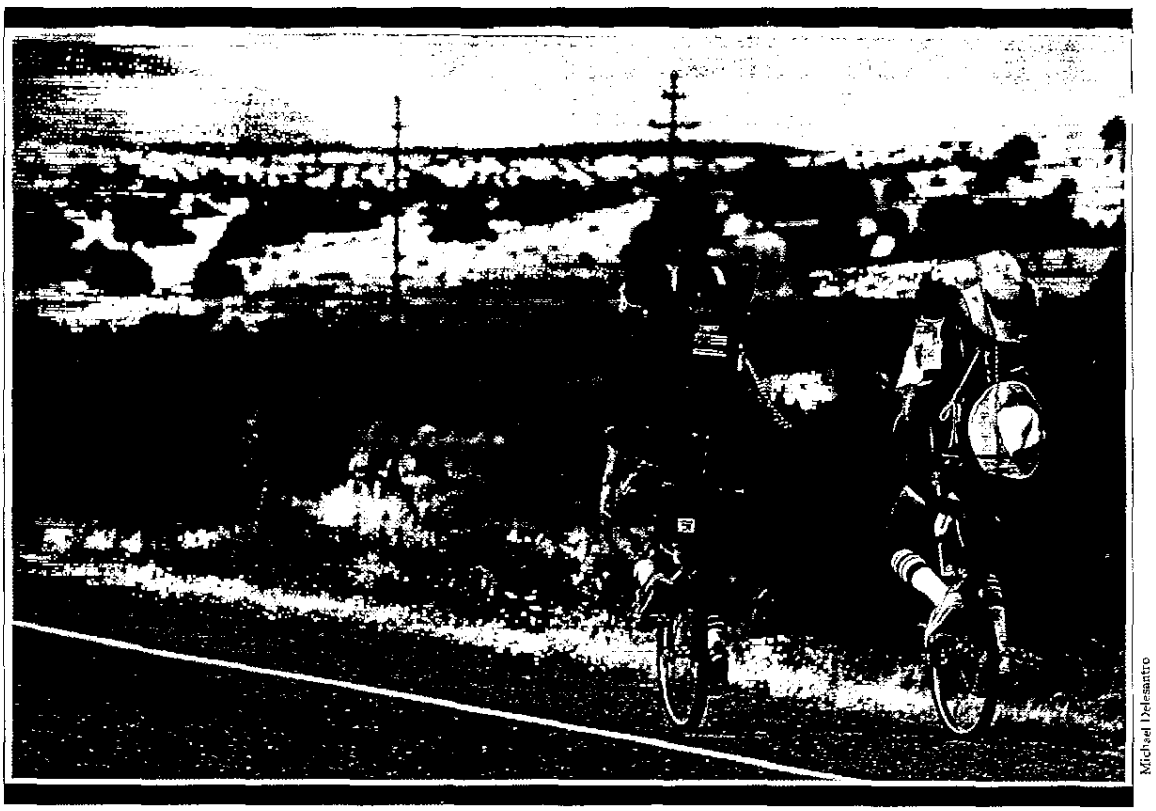

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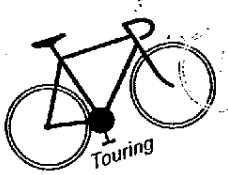

Touring

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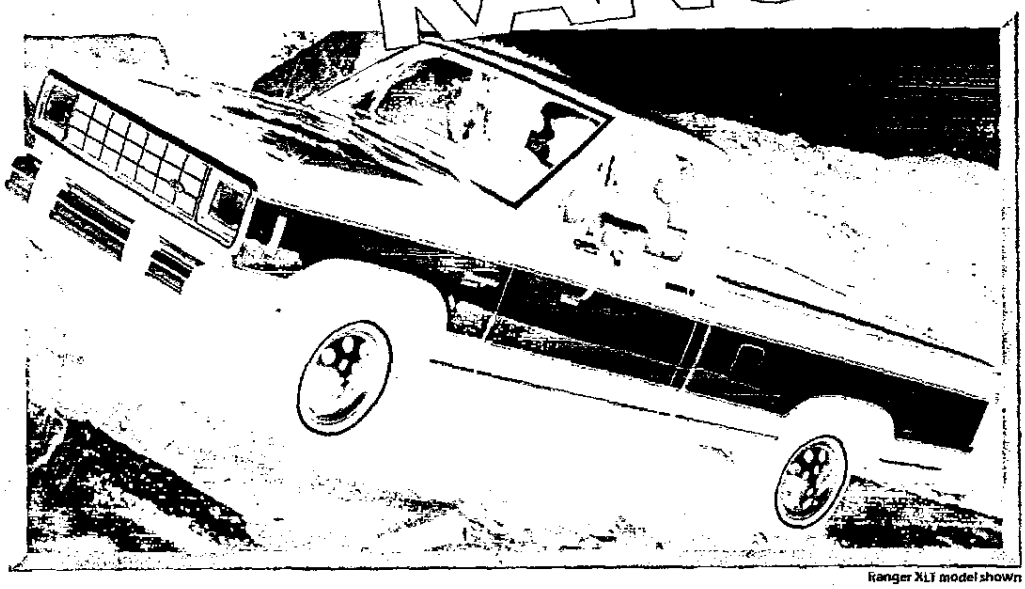

Ranger XLT model shown

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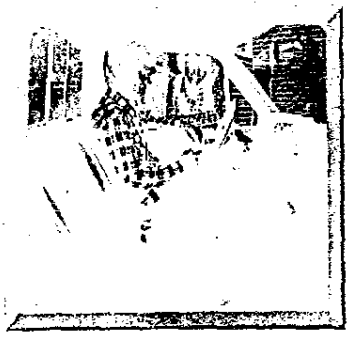

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